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PROCEEDINGS

OF THE

Biological Society of Washington

VOLUME XVIII

1905

WASHINGTON
PRINTED FOR THE SOCIETY
1906

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OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

For 1905

(ELECTED DECEMBER 31, 1904)

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VOL. XVIII, PP. VII-XII JANUARY 26, 1906

PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

PROCEEDINGS.

The Society meets in the Assembly Hall of the Cosmos Club on alternate Saturdays at 8 P. M. Brief notices of the meetings, with abstracts of the papers, are published in *Science*.

January 14, 1905—395th Meeting.

The President in the chair and 46 persons present.

A. D. Hopkins exhibited fossil borings of cerambycid beetles.

W. P. Hay noted that in modern literature Cæsalpino is rightly credited with discovering the circulation of the blood.

The following communications were presented:

C. O. Townsend: Distribution and Development of the Sugar Beet Industry in the United States.

A. C. Veatch: The Question of Origin of the Natural Mounds of Louisiana, Arkansas, and Texas.

A. S. Hitchcock: The Twigs of Woody Plants with Deciduous Tips.

January 28, 1905—396th Meeting.

The President in the chair and 110 persons present.

The following communications were presented:

Ernest Thompson Seton: Life Histories of Some Rodents of Manitoba; Life History of the Northern Coyote.

February 11, 1905—397th Meeting.

The President in the chair and 68 persons present.

Vernon Bailey exhibited a large pearl mussel from Texas.

L. O. Howard noted the first authentic record of *Stegomyia* on the Pacific coast of Mexico.*

The following communications were presented:

Albert Mann: Diatoms.†

E. A. Mearns: Animal Life of Mount Apo of the Philippine Islands.‡

February 25, 1905—398th Meeting.

The President in the chair and 37 persons present.

C. E. Waters presented remarks on Dr. Mann's paper on diatoms at the preceding meeting.

E. L. Greene noted the work of P. I. Rafinesque of Switzerland.§

The following communications were presented:

E. L. Greene: The Earliest Local Flora.

David White: Fossil Plants of the Group Cycadofilices.

March 11, 1905—399th Meeting.

The President in the chair and 87 persons present.

L. O. Howard exhibited several articles woven from artificial silk.

E. L. Morris noted the new edition of Cassino's Naturalists' Directory.

F. H. Blodgett exhibited a microscopic mount of an ant.

F. H. Knowlton noted recent papers on the salts of human blood.

The following communication was presented:

Willett M. Hays: Breeding Problems.

March 25, 1905—400th Meeting.

Vice-President Hay in the chair and 77 persons present.

M. W. Lyon, Jr., and others noted the large number of crows found dead in the vicinity of Washington from malarial infection.

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* To be published in a monograph by the Carnegie Institution.

† Smiths. Misc. Coll. (Quar. Issue), XLVIII, 1, 1905.

‡ Proc. U. S. Nat. Mus. XXVIII, 425–460, 1905.

§ Plant World, 1905.

W. L. McAtee noted the large number of bird foods found in drift.*

The following communications were presented:

Hugh M. Smith: Ichthyologia Miscellanea: *a.* The proper scientific name of the blue-gill sunfish; *b.* Note on a rare flying-fish (*Exocoetus lütkeni*); *c.* Feeding habits of the trigger fish (*Balistes*).

A. G. Maddren: Notes on the Occurrence of Mammoth Remains in Alaska.†

A. D. Hopkins: Ornaments and Blemishes in Wood Caused by Birds and Insects.

April 8, 1905—401st Meeting.

The President in the chair and 43 persons present.

The following communications were presented:

W. P. Hay: A Class of Arthropoda New to the District of Columbia.

W. H. Osgood: An Extinct Ruminant Related to the Musk Ox.‡

B. W. Evermann: The Trout of the Kern River Region.

April 22, 1905—402d Meeting

The President in the chair and 30 persons present.

W. P. Hay reported a new species of crayfish, *Cambarus monongahelensis* Ortmann, from Pittsburg, with notes on the colors of several species.

A. B. Baker presented a plant of *Hepatica hepatica* with double flowers.

The following communications were presented:

H. D. House: Some Problems in the Study of Violets.

F. H. Knowlton: Notes on Some Fossil Figs.

H. W. Oldys: Instinct in Man and Reason in the Lower Animals.

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* Science, 1905.

† Smiths. Misc. Coll. (Quar. Issue) XLVIII, 4-117, 1905.

‡ Smiths. Misc. Coll. (Quar. Issue) XLIX, 173-185.

May 6, 1905—403d Meeting.

Vice-President Hay in the chair and 26 persons present.

H. D. House and others discussed the periodicity of flowering stems from the perennial roots of *Isotria verticillata*.*

The following communications were presented:

Paul Bartsch: Notes on the Breeding of the Woodcock about Washington; An Unusual Nesting Site of the Carolina Wren.†

C. E. Waters: Fern Stems.

October 28, 1905—404th Meeting.

The President in the chair and 66 persons present

A. A. Doolittle exhibited a peculiar fruit of walnut.

A. D. Hopkins spoke of the bark-beetles destructive to the Colorado forests.

H. M. Smith and others noted the unusual number of woodcock and other birds recently occurring near Washington.

H. W. Oldys presented the newly observed notes of a hermit thrush.

The following communications were presented:

B. W. Evermann: Changes in the Bird Life on an Indiana Farm During Recent Years.

L. O. Howard: Some notes on the Yellow Fever Mosquito.

Theodore Gill: An American Cretaceous Chimaeroid Ovicapsule.

November 11, 1905—405th Meeting.

Vice-President Hay in the chair and 36 persons present.

B. W. Evermann noted three new species of fish from Santo Domingo.

W. H. Osgood exhibited a mastodon tooth from Alaska, and noted the geographical distribution of American mastodons.‡

W. L. Hahn exhibited a branch of the red maple rooting at its decumbent apex, and noted an extension of range for the little brown bat (*Myotis lucifugus*).§

C. W. Stiles cited the records for parasitic rat-tailed larvae (*Aristilis*) in man.

Theodore Gill spoke on the distribution of the wolf-fishes of the genus *Anarrhicas*.

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* Will be published in Rhodora.

† Will be published in Proc. U. S. Nat. Mus.

‡ Proc. Biol. Soc. Wash. XVIII, 254, 1905.

§ Proc. Biol. Soc. Wash. XVIII, 254, 1905.

W. H. Evans spoke of the good results of introducing minnows in Hawaiian rice beds to reduce the number of mosquitos.*

The following communications were presented:

E. L. Greene: Linnaeus as an Evolutionist.

F. V. Coville: The International Botanical Congress at Vienna.

H. M. Smith: Notes on the Sargassum Fish (*Pterophryne histrio*).

November 25, 1905—406th Meeting.

The President in the chair and 69 persons present.

The following communications were presented:

L. O. Howard: More Notes on the Yellow Fever Mosquito.

T. S. Palmer: The New York Meeting of the American Ornithologists Union.

W. W. Cooke: Discontinuous Breeding Ranges of Birds.

December 9, 1905—407th Meeting.

The President in the chair and 37 persons present.

This meeting was in celebration of the 25th anniversary of the Society, at which the following papers were read:

J. W. Chickering: The Potomac-Side Naturalists' Club and its Predecessors.

Theodore Gill: The Early Days of the Biological Society.

F. H. Knowlton: The Present and Future of the Biological Society.

December 23, 1905—408th Meeting.

TWENTY-SIXTH ANNUAL MEETING.

The President in the chair and 17 persons present.

The annual reports of the Recording Secretary and the Treasurer were read and accepted. The following officers were elected for the year 1906:

President: Frank H. Knowlton.

Vice-Presidents: T. S. Palmer, W. P. Hay, E. L. Greene, E. W. Nelson.

Recording Secretary: M. C. Marsh.

Corresponding Secretary: Wilfred H. Osgood.

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* Will be published from Agr. Exp. Sta. Honolulu, by D. L. Van Dine.

Treasurer: David White.

Councillors: A. K. Fisher, A. D. Hopkins, J. N. Rose, L. Stejneger, A. B. Baker.

The President announced the appointment of the following standing committees for the year 1906:

Committee on Publications: W. P. Hay, David White, W. H. Osgood, E. A. Goldman, C. A. McKnew.

Committee on Communications: Vernon Bailey, A. B. Baker, A. D. Hopkins, J. N. Rose, H. M. Smith.

VOL. XVIII, PP. 1-8 JANUARY 20, 1905

PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

DESCRIPTIONS OF A NEW GENUS AND ELEVEN NEW SPECIES OF PHILIPPINE BIRDS.

BY EDGAR A. MEARNS,

(Major and Surgeon, U. S. Army.)

These descriptions are based on a collection of birds made by me, with the assistance of members of the Philippine Scientific Association,* during a residence of more than a year in the military department of Mindanao. I would express my sincere thanks to Mr. Oberholser, and especially to Dr. Richmond, of the U.S. National Museum, for their assistance during the preparation of this paper.

Leonardia, new genus of **Timaliinæ.**

Type *Leonardia woodi* sp. nov. Bill somewhat depressed, broader than high at base, higher than broad at anterior border of nostrils, equal in height and breadth at posterior edge of nostrils; culmen strongly ridged, curved from base; maxilla with a subterminal notch; nostrils apparently elongate-oval†; distance between anterior angle of nostril and tip of bill equal to the length of the hind toe without claw. Rictal bristles strongly developed. Length of skull equal to that of tarsus. Length of tarsus contained 2⅓ times in that of wing. Tarsus booted. Hind toe with claw less than half the length of tarsus. Wing and tail about equal. Wing rounded, the first primary half as long as the third. Tail moderate, graduated, with feathers somewhat pointed, and webs not decomposed. Plumage full and soft.

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* The activities of this organization, of which Major-General Leonard Wood, U. S. Army, is president, have resulted in a large general collection which has been sent to the United States National Museum.

† Specimen slightly defective from attack of ants.

Leonardia woodi sp. nov.

BAGOBO BIRD. *Doo-roogh-bah'-tong* (Bagobo).

Type No. 192,260, U. S. National Museum. Original number, 13,689, Male adult. Mount Apo at Todaya (4,000 feet altitude), Mindanao, P. I., July 11, 1904.

Description of type.—Third primary equal to ninth; fifth, sixth, and seventh subequal and longest. Upperparts bistre, washed with burnt umber on lower back, rump, and upper tail-coverts. Tail blackish seal brown. The feathers of the rump, which are very long and soft, have concealed white spots. Sides of head and neck (including lores and ear-coverts), breast, and abdomen slate-gray, the latter washed with white. Sides gray, washed with burnt umber, particularly on the flanks, some of the feathers with concealed white spots. Thighs gray washed with burnt umber; under tail-coverts tawny olive, the longest ochraceous; chin and throat white. Iris reddish brown; bill black; feet and claws plumbeous. Total length, 205 mm.; alar expanse, 280; wing, 90; tail, 87; bill, measured from nostril, 10; culmen, 16; tarsus, 38; middle toe and claw, 27.

This genus and species are named in honor of Major-General Leonard Wood, U. S. Army, who, as Governor of the Moro Province, has encouraged every form of scientific effort in the Southern Philippine Islands.

Pseudotharrhaleus griseipectus sp. nov.

GRAY-BREASTED WOOD-ACCENTOR.

Type No. 192,259, U. S. National Museum. Mount Apo at 6,200 feet, Mindanao, P. I., July 8, 1904.

Adult female (type and only specimen).—Size similar to that of the female of *P. unicolor* Hartert, assuming that the measurement "wing 92.5" is a typographical error for 62.5; but the bill appears to be 2 millimeters shorter. Coloration similar to that of the male and female of *P. caudatus* Grant, from which it may be readily distinguished by the shortness of the tail, 81 mm. in the female of *P. griseipectus* and 86.36 in the female of *P. caudatus*. The outermost tail-feather is slender and abortive, measuring 32 mm. in length. Tarsus with six scutes. Rictal bristles scarcely discernable. Plumage soft and loose, the feathers of the back and rump 35 mm. in length, with gray bases and fluffy aftershafts; webs of rectrices decomposed and abraded apically. General color above burnt umber, washed with Vandyke brown on rump and upper tail-coverts; tail darker; wing quills brownish black, the outer webs margined with the same color as the upperparts, and extending to the outer webs of the underside of wing; head darker, inclining to sepia, with a dirty grayish supraorbital stripe; sides of throat, breast, and a wash down the center of the abdomen mouse gray; chin and middle of throat white, each feather with a grayish middle; sides, crissum, and under tail-coverts like the back; breast tinged with gray; iris hazel; bill with maxilla black, mandible grayish horn-color;

feet and claws sepia brown (from fresh specimen). Total length, 176; alar expanse, 200; wing, 63; tail, 81; bill, measured from base of mandible, 14; bill from nostril, 8.5; tarsus, 14; middle toe with claw, 23.

Remarks.—The type and only specimen of *P. unicolor* Hartert (Bull. Brit. Orn. Club, Vol. XIV, No. cvi, p. 74, April 28, 1904) was taken by Mr. John Waterstradt on a different part of Mount Apo, at an altitude of only 3,000 feet, or 3,200 feet lower than the type locality of *P. griseipectus*. Mr. Waterstradt's specimen was killed in November while mine was taken in July, and it is possible that his bird was an immature individual of the species here described.

Brachypteryx mindanensis sp. nov.

MOUNT APO SHORTWING. *Boor-roo-wing'* (Bagobo).

Type No. 192,255, U. S. National Museum, from Mount Apo at 6,000 feet, June 21, 1904. Adult female.

The three Philippine species of *Brachypteryx* are closely related. In color, the form from Mount Apo, Mindanao, is nearest to *B. brunneiceps* from the Island of Negros; but the latter is the smallest of the three forms, while the former is the largest.

Adult male.—Similar to the male of *B. brunneiceps*, but larger and apparently less heavily washed with black on the top of the head and throat. Belly without a trace of grayish wash present in *B. poliogyna* from the Island of Luzon. Measurements of No. 192,256, U. S. National Museum, from Mount Apo at 6,300 feet, July 4, 1904: Total length, 158; alar expanse, 220; wing, 70; tail, 62; bill from base of culmen, 14; bill from nostril, 9.5; tarsus, 33; middle toe and claw, 23. Iris dark brown; bill, feet, and claws gray-black, darker than plumage.

Adult female.—Similar to the female of *B. brunneiceps*, but differs, in addition to its larger size and relatively longer tail, in having the abdomen washed with brownish gray. The wing-quills and spurious wing are brown. Measurements of type: Total length, 158; alar expanse, 212; wing, 70; tail, 56; bill from base of culmen, 14; bill from nostril, 9; tarsus, 31; middle toe with claw, 24. Iris dark brown; bill, feet, and claws dark gray.

Young male in first plumage.—Slate-colored feathers of the adult plumage are present in the greater wing-coverts and pectoral region of the specimen (No. 192,257, U. S. National Museum, from Todaya, at 4,000 feet on Mount Apo, July 11, 1904). General color clove brown, the feathers slaty at base, all but the quills with russet shaft spots, which are small and triangular on the back, and so extended as to give a general russet tone to the abdomen. Iris brown; bill and feet gray-black. Total length, 155; alar expanse, 218; wing, 70; tail, 50; bill from base of culmen, 13; bill from nostril, 8.6; tarsus, 33; middle toe with claw, 22.

The name *Boor-roo-wing'*, used by the native Bagobos, is in imitation of the lisping notes of this bird, which suggest sounds of the winds.

MEASUREMENTS OF THREE ALLIED SPECIES OF *Brachypteryx*.

	Sex and age.	Total length.	Wing.	Tail.	Tarsus.
B. poliogyna	Male adult	140	66	48	31.7
B. brunneiceps	Male adult	137	64	44	30.5
B. mindanensis	Male adult	158	70	62	33.0
B. poliogyna	Female adult	127	67	48	29.2
B. brunneiceps	Female adult	132	67	48	29.2
B. mindanensis	Female adult	158	70	56	31.0

Macronous mindanensis montanus subsp. nov.

MOUNTAIN MACRONOUS. *Tah-go'-saa* or *Tah-go-say'-ahn* (Bagobo). *Tar-man'-op* (Moros of Pantar and Lake Lanao).

Type No. 192,312, U. S. National Museum, from Mount Apo at Todaya (4,000 feet altitude), Mindanao, P. I., July 12, 1904. Adult male. (Original number, 13,728.)

Adult male and female.—Similar to *Macronous mindanensis mindanensis* but very much darker, with heavier markings throughout. The dark shaft-streaks are increased in area and intensity; the blackish feathering of the upper side of the head occupies more of the nape; and the back and rump are Prout's brown instead of raw umber. The underparts are dark from the throat backward, the flanks being dark isabella instead of clay color. This mountain form (from Pantar at 2,000 feet and Mt. Apo at 4,000 feet) is slightly smaller than the subspecies *mindanensis*. It is still farther removed from *Macronous striaticeps* Sharpe from the Island of Basilan.

"*Macronus mindanensis*" was described by Steere from "Mindanao, Samar, Leyte." As his party did not visit the mountains of the interior of Mindanao it is safe to assume that the paler coast form was the one described.

Æthopyga boltoni sp. nov.

MOUNT APO SUN-BIRD. *Kah-poi-yah-poi'-yuh* or *Kah-pue-yoo-ahn'* (Bagobo).

Type No. 192,279, U. S. National Museum, from Mount Apo at 6,250 feet, Mindanao, P. I., June 25, 1904. Adult male. (Original number, 13,585.)

Adult male (3 specimens).—Entire head and neck all round, except middle of chin and throat, slate-gray, faintly washed with French green, the feathers of the forehead narrowly edged with metallic French green; upper back gray, strongly washed with oil green; lower back olive green; rump citron yellow; wings brownish black, with wing-coverts and outer webs of secondaries olive-green; under wing-coverts, and edges of inner webs of primaries and secondaries, white. Tail with longest feather 12 millimeters longer than the next, 25 millimeters longer than the outer rectrix; middle pair of tail-feathers entirely metallic French green, the remaining rectrices being green-black, broadly tipped with gray on the outer and white on the inner webs. Underparts with a median stripe of citron yellow extending from bill to chest, broadening posteriorly and minutely mixed with orpiment orange at upper margin of chest; flanks, abdomen, and under tail-coverts yellow; chest orange; pectoral tufts Chinese orange. Iris red; bill black, faintly tipped with horn color; feet and claws black, except the under side of toes which are yellowish. Length, 130; alar expanse, 180; wing, 57; tail, 55; culmen (chord), 21; tarsus, 18; middle toe with claw, 14.

Adult female.—Head, neck all round, and chest, slate-gray. Upperparts, including upper wing-coverts and exposed outer webs of wing-quills, olive-yellow. Tail similar to that of male, but shorter, duller, with feathers rounded at tip. Underparts, including under tail-coverts, yellow, whitish on middle of abdomen. Size considerably smaller than male. Culmen, 18; wing, 48.

Young male in first plumage (No. 192,278, U. S. National Museum, Mount Apo at 7,800 feet, June 20, 1904.—Head, sides of throat, and upperparts, smoke gray, washed on lower back, rump, and upper tail-coverts with green; upper wing-coverts and exposed portion of outer webs of quills, olive-green. Underparts, including stripe on middle of chin and throat, smoke gray washed with greenish yellow; lining of wings white. Tail-feathers pointed, similar to the adult but shorter and duller. Iris brown; bill black, orange at base, yellow and orange inside; metatarsus black; toes orange, dusky above. Older males soon grow to resemble adults, the orange first showing in the middle of the breast, the flanks and belly becoming yellow at the same time, the pectoral tufts and richest coloring probably not appearing before the second year.

This beautiful Sun-Bird was seen on Mount Apo from Todaya, 4,000 feet altitude, to the actual summit. It sometimes fluttered in front of flowers like a Hummingbird. It is named in honor of First Lieutenant Edward C. Bolton, U. S. Army, Military Governor of Davao District, Mindanao, whose assistance enabled the author to reach the summit of Mount Apo.

Cyrtostomus dinagatensis sp. nov.

DINAGAT ORANGE-BREASTED SUN-BIRD.

Type No. 191,853, U. S. National Museum, from Dinagat, Island of Dinagat, P. I., April 21, 1904. Adult male. (Original number, 13,449.)

This species is intermediate between *Cyrtostomus aurora* and *C. jugularis.* In the former, the band across the chest adjoining the dark metallic plastron is rich cadmium, almost orpiment orange, while this band in *C. dinagatensis* is plain orange. In *C. jugularis* this pectoral band is absent, although, not infrequently, some of the feathers next to the metallic plastron are shaded with orange.

Adult male.—Similar to the male of *C. jugularis*, except that the chest is orange instead of yellow; and the rest of the underparts are deeper yellow; there is a metallic black supraorbital line; and the feathers of the crown have blackish centers. In the type the forehead is metallic violet-purple. Wing, 57; tail, 45; culmen (chord), 18; tarsus, 14.

A specimen from the Island of Panay, P. I. (No. 161,382, U. S. National Museum), apparently this species, lacks the metallic forehead, which may be an inconstant feature.

Anthreptes cagayanensis sp. nov.

CAGAYAN SULU BROWN-THROATED SUN-BIRD. *Tal-lu-gus-lu'-gus* (Moros of Cagayan Sulu Island).

Type No. 191,897, U. S. National Museum, from the Island of Cagayan Sulu, P. I., February 25, 1904. Adult male. (Original number, 13,270.)

This is a slight insular form, most closely related to *Anthreptes wiglesworthi* (Hartert), from Sulu Island, P. I., from which it differs in being decidedly yellower below; the sides of the head are more reddish; the greater wing-coverts are narrowly edged with olive instead of broadly with ferruginous; and the bill is smaller. Iris hazel; bill all black; feet greenish olive, with under side of toes yellow.

Merula kelleri sp. nov.

MOUNT APO BLACKBIRD. *Po'-lo* (Bagobo).

Type No. 192,165, U. S. National Museum, from Mount Apo at 6,000 feet, southern Mindanao, P. I., June 18, 1904. Adult male. (Original number, 13,524.)

The Mount Apo Blackbird or Robin is most closely related to *Merula thomassoni* of Seebohm, having the color pattern of *Turdus pritzbueri* Layard. Four primaries (2 to 5) are emarginate on the outer web.

Adult male (7 specimens).—Chest, head and neck all round broccoli brown, darkest on the top of the head. Body, including upper tail-coverts and crissum, uniformly clove brown, slightly paler below. Wings and tail brownish black. Iris brown; eyelids, bill, feet, and claws all yellow. Measurements of type: Total length, 257; alar expanse, 388; wing, 116; tail, 111; bill from nostril, 13.5; culmen (chord), 21; tarsus, 33; middle toe with claw, 30.

Adult female (4 specimens).—Similar to the adult male, but browner. Back sepia; underparts washed with raw umber. Iris brown; eyelids, bill, feet, and claws, yellow. Length, 247; alar expanse, 375; wing, 119; tail, 103; bill from nostril, 13; culmen, 21; tarsus, 33; middle toe with claw, 30.

Immature male (No. 192,168, U. S. National Museum, from Mt. Apo at 6,000 feet, June 20, 1904).—Underparts washed with raw umber as in adult females; upperparts slightly darker than the female, faintly olivaceous, with the feathers finely rayed. Colors of the soft parts and measurements as in adult males except that the tail is about ten millimeters shorter.

First plumage (5 specimens, taken on Mt. Apo in June and July).—The spotted plumage of the young resembles that of the European Blackbird. Upperparts dusky, washed with raw umber, especially on the head, neck, upper back and wing-coverts; feathers of back with black edgings. Underparts sepia brown, spotted with lighter shades of brown and with black. The black spots are cordate on the breast, occupying the tips of the feathers, which have light shaft-streaks and markings varying from wood brown to burnt umber. Males are brighter and darker than the single female. In all, a rusty band occupies the middle of the throat. The soft parts are similar to those of adults, except that the eyelids are dull greenish olive, and the base of the maxilla slightly dusky.

This species is named in honor of Mr. Fletcher L. Keller, my faithful companion on Mount Apo.

Gerygone rhizophoræ sp. nov.

PHILIPPINE MANGROVE GERYGONE.

Type No. 190,097, U. S. National Museum. Adult male, from Zamboanga, Mindanao, P. I., October 14, 1903. Collected by Edgar A. Mearns (original number, 13,059).

This species is most closely related to *Gerygone flaveola* Cabanis from the Celebes and *G. salvadorii* Büttikofer from Southern Borneo. From the former it differs in its smaller size, in wanting the whitish lores and the yellowish wash on the crown and ear-coverts, in the upper surface being slightly darker, and the white spots on the inner web of the tail-feathers much larger. From the Bornean species, which it resembles in size, it differs in having the sides of the breast almost as yellow as in the Celebean species instead of olive-brown, in having the crissum nearly pure white instead of pale yellow, in having the inner edge of the quills white instead of pale vinous, and in having the white spots on the inner web of the tail-feathers very much larger.

Adult male and female (seven specimens).—Upperparts, including entire top and sides of head, ashy brown tinged with olive; upper tail-coverts browner; sides of neck yellowish olive; tail-feathers drab, subterminally and broadly banded with blackish, tipped with drab-gray, and with a white spot near the end of the inner web of all the tail-feathers except the innermost pair; wing-coverts like the back; quills darker brown and narrowly edged with olive; whole underparts straw yellow except the crissum which is almost white; lining and edge of wing yellowish white; thighs mixed straw color and olive-brown; inner edge of quills whitish. Measurements of male: Wing, 50; tail, 39; culmen, 10.5; tarsus, 16.

Muscicapula montigena sp. nov.

MOUNT APO FLYCATCHER. *K'ri'-kri* or *Sal-yb-see'-bon* (Bagobo).

Type No. 192,236, U. S. National Museum. Adult male, from Mount Apo at 6,000 feet altitude, Mindanao, P. I., July 7, 1904. Collected by Edgar A. Mearns (original number, 13,658).

It was a surprise to find on Mount Apo a species of this genus different from the one described by W. Blasius from Davao, near the base of the mountain. *Muscicapula samarensis*, *M. luzoniensis*, *M. nigrorum* and *M. montigena* form a related series, more distinct from *M. basilanica* (=*M. mindanensis* Blasius) than from each other.

Adult male (two specimens).—General color of upperparts, including lores, eye-ring, and sides of head dark slaty blue; white eyebrow-stripe reduced to small supraorbital patches; rump slightly washed with olivaceous; upper tail-coverts reddish burnt umber; tail feathers burnt umber; wing-coverts like the back; quills grayish brown, edged with reddish brown externally and with fawn color internally; underparts, except belly and sides, ochraceous, palest on the chin and under tail-coverts; belly whitish; sides bluish slate; lining and edge of wing ochraceous-buff. Length, 128; alar expanse, 208; wing, 65; tail, 51; bill from anterior border of nostril, 8.1; culmen, 10.5; tarsus, 18.5; middle toe with claw, 15.5. Iris brown; bill black; feet and claws light gray.

Adult female (two specimens).—Similar to the adult male except that the slaty blue of the back and rump are more perceptibly washed with olivaceous, and the lores, eye-ring, and touches on the ear-coverts are ochraceous-buff. Length, 125; alar expanse, 197; wing, 62; tail, 47; bill from anterior border of nostril, 7.5; culmen, 10.5; tarsus, 18; middle toe with claw, 16.5. Iris brown; bill black; feet and claws grayish flesh-color.

Immature female (No. 192,234, U. S. National Museum. Mount Apo at 6,000 feet, southern Mindanao, P. I., July 6, 1904).—Similar to adult females, but paler below, with obscure spotting across the chest and on the sides.

Pardaliparus elegans mindanensis sp. nov.

MINDANAO TITMOUSE. *Kah-too-ree'-nay* (Bagobo).

Type No. 192,267, U. S. National Museum. Adult male, from Mount Apo at 6,200 feet, Mindanao, P. I., June 25, 1904. Collected by Edgar A. Mearns (original number, 13,580).

Adult male (three specimens).—Similar to *Pardaliparus elegans elegans*, but smaller with a relatively smaller bill; coloration heavier and yellower; the black of chin and throat extending to the chest; whitish spots of upper wing-coverts and tail-feathers washed with yellow. Length, 117; alar expanse, 210; wing, 67; tail, 41; culmen, 9.5; tarsus, 16; middle toe with claw, 15.

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PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

FURTHER CHANGES IN CRUSTACEAN NOMENCLATURE.

BY HARRIET RICHARDSON.

The changes in nomenclature which have been made by Miss Rathbun * necessitate further remarks in regard to the fate of the isopod genera *Idotea* Fabricius 1798 and *Ligia* Fabricius 1798.

It has been pointed out in the paper referred to above that *Idotea* Fabricius 1798 is preoccupied, *Idotea* Weber 1795 † having been previously used for a genus of crabs. It appears that in 1796 in the "Index Alphabeticus" to the "Entomologia Systematica emendata et aucta," Fabricius mentions the genus *Idothea* S. (p. 86), the letter S referring to the "Supplementum." *Idothea* here is a *nomen nudum*, the description of the genus appearing two years later with the different spelling *Idotea*. *Idothea* in the index undoubtedly refers to *Idotea* in the "Supplementum" and as *Idothea* is the correct spelling according to the derivation of the word, it seems more than likely that the omission of the letter *h* from *Idothea* in the "Supplementum" was an error. Moreover in the "Index Alphabeticus" of the "Supplementum," published in 1799, we find again the spelling *Idothea*,* which may be considered a correction of *Idotea* in the text. In view of this fact *Idothea* Fabricius 1799 can be considered the earliest synonym of *Idotea* Fabricius 1798 and the genus can be retained as an isopod genus with the spelling *Idothea* Fabricius 1799, which is then distinct from *Idotea* Weber 1795.

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* Some changes in Crustacean Nomenclature, Proc. Biol. Soc. Washington, XVII, pp. 169-172, 1904.

† Nomenclator entomologicus secundum Entomologiam systematicam ill. Fabricii adjectis speciebus recens detectis et varietatibus, Kiel and Hamburg, 1795.

Ligia Fabricius 1798 must be abandoned as a genus of Isopods, as Miss Rathbun has pointed out. I find that the earliest synonym is one quite similar to the genus of Fabricius and heretofore has been supposed to be a *nomen nudum*. *Ligyda* is suggested by Rafinesque † in place of the shorter *Ligia*, and is equivalent in every respect to the genus of Fabricius. The name *Ligyda* Rafinesque 1815 may therefore be used for the preoccupied *Ligia* Weber.

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* Norman, A. M., British Isopoda of the Families Ægidæ, Cirolanidæ, Idoteidæ, and Arcturidæ, Ann. Mag. Nat. Hist., ser. 7, XIV, p. 441, 1904.

† Analyse de la Nature ou Tableau de l'Univers et des corps organisés, p. 101, Palerme, 1815.

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PROCEEDINGS

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DIAGNOSES ARAGALLORUM.

BY EDWARD L. GREENE.

Responding to a request lately made that I would name some newly gathered specimens of *Aragallus* from New Mexico, I found it needful to examine with care a copious supply of old material resting chiefly in the National Herbarium, from various parts of the Southwest all the way from the Rio Colorado to the Rio Grande; material that had been accumulating from the days of Lindheimer and Charles Wright more than a half-century ago, down to our own time; most of it labelled *Oxytropis Lamberti*.

When, some seven years since, I was demonstrating the necessity of adopting the generic name *Aragallus*, I came also to a realization of the fact that the species of the genus in North America were more numerous than had ever yet been indicated, and in the mean time, besides several proposed as new by myself,* Mr. Nelson, of Wyoming,† and Mr. Rydberg, of New York,‡ have added quite a number, theirs mostly from the northern Rocky Mountain region within the United States.

In the course of my own newly resumed study of the genus, I found that in the Texano-Neo-Mexican region there was much more waiting to be done than I had anticipated; and I begin this series of diagnoses with the essential characters of some species belonging to this well defined geographic and climatic region.

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* Pittonia, iii, 212, and iv, 69.

† Erythea, vii, 57-64.

‡ Fl. Montana, 250-255.

Aragallus Metcalfei sp. nov.

A foot high, stout both as to the branches of the caudex and the scapes, the whole plant silky-glossy with a long appressed pilose-villous pubescence; leaflets in about 7 to 9 pairs, closely approximate, often alternate rather than in pairs, oblong-lanceolate, acute, ½ to 1 inch long; spikes 2 or 3 inches long, dense above the middle, the lower flowers scattered; bracts lanceolate-subulate, conspicuous; calyx cylindric, the subulate teeth hardly half as long as the tube, the whole 4 lines long; corolla more than twice as long, red-purple; pods about 1 inch long, sessile, very erect, nearly glabrous, thinnish, the texture only firmer than that of parchment.

In the Black Range, southern New Mexico, at 10,000 feet, O. B. Metcalfe, 1904. Type in my herbarium.

Aragallus Knowltonii sp. nov.

Barely a foot high but stout, rigidly erect, canescently short-silky, both faces of the leaflets about equally so, these in about 7 to 9 pairs, elliptic-oblong, acute 1¼ inches long; scapes bearing the spikes barely above the leaves; spikes 3 to 5 inches long and rather lax, at least never dense; bracts very short and broad, ovate, acuminate; corolla red, hardly ¾ inch long; calyx not densely invested with a villous closely appressed pubescence, cylindric and with short subulate teeth; pods long and very erect, more than an inch long, coriaceous, minutely and not densely silky-hairy, obcompressed.

In the vicinity of Flagstaff and the San Francisco Mountain, northern Arizona; on Mt. Humphreys by Rusby, July 2, 1883; then by myself in 1889 among the woods near Flagstaff; also in the same year by Mr. F. H. Knowlton, whose specimen in the U. S. Herb. is the type.

Aragallus majusculus sp. nov.

Branches of the caudex short, stout, the mature plant 12 or 14 inches high, the short pointing spikes borne hardly beyond the very long and erect leaves; scanty pubescence of the very stout striate scapes villous, that of the foliage dense, silvery-silky, of the calyx and pods more tomentulose; leaflets in 5 to 7 pairs, or alternate, oblong-elliptical, about an inch long; flowering spikes thick, only 1½ or 2 inches long; bracts reduced and inconspicuous; corollas yellowish, or perhaps pinkish; pods hardly ¾ inch long but very thick, commonly only oblong-ovoid, sessile, erect; fruiting calyx showing subulate teeth almost as long as the short campanulate tube.

Henry Mountains, southern Utah, July, 1894, M. E. Jones, in U. S. Herb., his No. 5674 a fine fruiting specimen, being the type; while No. 5695, from which caudex and flowers are described, is, with hardly a doubt, the same species.

Aragallus abbreviatus sp. nov.

Compared with *A. Lamberti* low, and with leaflets crowded, flowers large and spike short; scapiform peduncles only 4 to 8 inches high including the spike; flowers ¾ inch long; calyx with very short teeth broad at base; villous-strigose coriaceous pods erect, sessile, little more than ½ inch long, hardly twice the length of the calyx.

Near Dallas, Texas, collected by Reverchon, and distributed by him and also by A. H. Curtiss, for *A. Lamberti*, from which it is abundantly distinct. The spikes of flowers are commonly 2 inches long and nearly as broad. Named in reference to the characteristically short calyx-teeth and short pods. Type in my herbarium.

Aragallus articulatus sp. nov.

Erect, slender, 10 inches high, with pale glaucescent herbage sparingly pilose; leaves 6 inches long, with 4 or 5 remote pairs of linear leaflets about ¾ inch long, shorter than the internodes of the rachis upon which they are inserted by a distinct white callosity; flowers unknown; pods ½ inch long, sessile acute, strigulose.

Collected on the Canadian River, perhaps within the limits of what is now Colorado, by Dr. J. M. Bigelow, on Whipple's Expedition; referred by Dr. Torrey to *A. Lamberti* as a variety, as the label in his handwriting in U. S. Herb. demonstrates. It is doubtless the specimen (there are two on the sheet) of which he speaks in Whipple's Report, p. 80, as having "pods shorter and thicker, and strigose-hirsute." Both this and the other "*Oxytropis Lamberti*" of Bigelow's collecting on the Canadian may be supposed to have been included in Grays' var. *Bigelovii*. But the foliage in *A. articulatus* is very peculiar, and the pods in *A. Bigelovii* are stipitate.

Aragallus aboriginum sp. nov.

Very stout, large-leaved but low, scarcely a foot high, whitish and glossy with a dense long appressed pubescence; leaves 7 or 8 inches long, of 7 to 9 pairs of 1½-inch-long leaflets all acute and inclining to lanceolate from oblong; stout scapes shorter than the leaves, bearing only a part of the long spike above them; short-cylindric calyx with triangular-subulate short teeth; flowering spike 5 inches long, not dense; pods ¾ inch long, hard-cartilaginous, densely villous-tomentose.

Cimarron River, Oklahoma, June, 1891, M. H. Carleton in U. S. Herb. Very large and low white-flowered species.

Aragallus falcatus sp. nov.

Rather slender, a foot high; mature herbage green, when very young slightly glossy with a not dense appressed villous pubescence; leaves 6 or 8 inches long, of 7 to 9 pairs of acutely lance-linear subfalcate firm leaflets 1 inch long or more; peduncles about equalling the leaves; spikes of red-purple flowers about 3 inches long, not dense; bracts slender-subulate; calyx subcampanulate, densely villous-tomentulose, the slender-subulate teeth short; densely tomentulose pod barely ½ inch long, erect, sessile, little if at all exceeding the calyx-teeth.

Watson, Missouri, June 1, 1894, B. F. Bush; sent to U. S. Herb. for *A. Lamberti.*

The next four species are of the northerly Rocky Mountain regions, from western Dakota to Wyoming and Montana; all but the fourth having passed with some for *A. Lamberti*.

Aragallus formosus sp. nov.

Stout, multicipitous, the decumbent scapes 6 to 10 inches high; herbage neither silvery nor canescent, green, though far from glabrous, all the parts clothed with a comparatively coarse appressed pilose pubescence; leaflets thinnish, 1¼ inches long, oblong-linear, very acute; scapes little surpassing the foliage; spikes of large red flowers 1½ to 2½ inches long, 1½ in diameter; bracts lanceolate, hardly equalling the cylindric densely pilose calyx, this with triangular-subulate acute teeth half as long as the tube; pods not known.

Black Hills near Fort Meade, South Dakota, June 7, 1887, Dr. W. H. Forwood, U. S. A.; specimens in U. S. Herb. Dr. Forwood describes the large corollas as being cardinal red; and this is not improbable, though in the dried state they are purple.

Aragallus invenustus sp. nov.

Multicipitous and decumbent, low, stoutish, villous-hirsute throughout; leaflets very many, small and crowded, elliptic-oblong, ¼ to ½ inch long; scapes 5 or 6 inches high, bearing the short spikes of whitish flowers a little above the foliage; bracts linear, much shorter than the calyx, this with long cylindric tube and short, broadly subulate teeth; pods nearly an inch long, ascending, the apiculation spreading, the whole villous-tomentose, texture coriaceous.

Known only from about Fort Meade, South Dakota, where it was collected, in both flower and fruit, by Dr. W. H. Forwood, in 1887; types in U. S. Herb.

Aragallus rigens sp. nov.

Rigidly erect, 8 inches high, rather slender, pale-green but not silvery, the pubescence scanty and strigulose; leaves rather long-petioled and erect; the leaflets in about 5 or 6 pairs and remote, though longer than the internodes of the rachis, subcoriaceous, linear, acute, ½ to 1 inch long, not callous at base, yet inserted each in a conspicuous hollow of the rachis which is thus notably articulated; flowers not seen; pods hard-coriaceous, oblong, abruptly beaked, the whole ¾ inch long, strigulose; calyx under the mature pods campanulate and with very short triangular teeth.

Cedar Creek, twelve miles above Glendive, Montana, July 15, 1884, L. F. Ward, in U. S. Herb. In the emphasized articulation of its leaflets with their rachis this must be regarded as a near ally of the geographically far removed and otherwise distinct *A. articulatus* defined above.

Aragallus ventosus sp. nov.

Low and multicipitous, canescently silky-villous; leaves long-petioled and slender, the 3 pairs of oblong-elliptical leaflets approximate at the end of the petiole, so to speak, about ½ inch long; slender peduncles twice the height of the leaves and about 5 or 6 inches long including the short capitiform spike; bracts lance-linear, villous-strigose, as are also the calyx-tube and its rather long linear teeth; keel of corolla with a short straight blunt point; pod unknown.

Dry ground in the valley of the North Fork of Wind River, Wyoming July 12, 1882, Dr. W. H. Forwood; type in U. S. Herb., labelled *Oxytropis Lagopus*, and doubtless related thereto, though a plant of slender habit, of few long leaflets as it were at the end only of a long petiole; also wholly destitute of the woolly-hairiness of *A. lagopus.*

Northward beyond the borders of the United States occur several more species proposed as new; several of these so manifestly allied to *A. Lamberti* as to have been labelled so in the herbaria. These have all been collected by the efficient and zealous botanists of the Canadian Geological Survey, and as distributed bear the numbers of that collection.

Aragallus Albertinus sp. nov.

Rather slender, 6 to 12 inches high, silvery-silky only as to the young and growing parts, when maturer glabrate, the green-looking upper face of leaflets only sparsely villous-pilose under a lens, these in numerous closely approximated pairs, hardly ¾ inch long, oblong-lanceolate, very acute; spikes of whitish or purplish flowers narrow and dense, borne well above the foliage; bracts subulate-linear, nearly equalling the calyx, this villous-tomentose and white, the subulate teeth almost as long as the subcampanulate tube; pods short, conspicuously acuminate, the beak-like point spreading, and only this surpassing the calyx-teeth.

A rather elegant and certainly well marked species, of which the type is from near Prince Albert, Saskatchewan, by Mr. John Macoun, July, 1896, sent me under the Geol. Survey No. 12,540; also in flower only, under No. 12,535. Earlier specimens referred here are from two localities in Alberta taken in 1895. Types in my herbarium.

Aragallus melanodontus sp. nov.

Stout, low, multicipitous, the erect scapes 5 inches high; plant villous-canescent, the hairs partly appressed, partly spreading; leaflets in 5 to 7 pairs, oval to oblong-lanceolate, acute, ¼ to ½ inch long; flowers large, white, in spikes little longer than broad; bracts subulate, not half as long as the rather large short-cylindric calyx, this villous with short dark-colored and longer white hairs, the oblong obtuse teeth of half the length of the tube and wholly black-hairy; pods unknown.

Species very well marked by its peculiarly obtuse black calyx-teeth. It is known to me by a sheet in my own herbarium collected by Mr. John Macoun at Elbow River, Alberta, in 1897; the label bearing the Geol. Surv. No. 18,513.

Aragallus Macounii sp. nov.

Growing parts silky-canescent, maturer herbage greener, the erect or slightly decumbent scapes a foot high or more, the as nearly upright leaves more than half as high, rather long-petioled; leaflets in 11 to 15 pairs, ovate-oblong or oblong-lanceolate, acute, often ¾ inch long, approximate but not crowded; spikes 1½ to 2½ inches high; bracts lanceolate, equalling the calyx-tube, herbaceous; calyx-teeth broadly and somewhat obtusely subulate, of much less than half the length of the villous-tomentulose subcylindric tube; corollas ¾ inch long, white; pods villous, small for the plant, little more than the beak exserted beyond the calyx-teeth.

Plains of Alberta, about Calgary, June and July, 1897, Mr. John Macoun, Nos. 18,516 and 18,517 Herb. Geol. Surv., Canad., named "*O. Lamberti*" but allied to *A. monticola* rather. Type in my herbarium.

Aragallus cervinus sp. nov.

Slender and rather low, the tallest scapes 8 inches high, these and the leaves erect; herbage silvery-silky, the upper face of leaflets least so, their lower most so, these very numerous and almost crowded, narrowly lance-linear, ½ inch long or more, acute; flowers white, very few, 5 to 12 in each short capitiform spike; bracts subulate-linear, shorter than the calyx, this cylindric with short teeth; pods not seen.

At Deer Park, Lower Arrow Lake, British Columbia, June 8, 1890, J. M. Macoun, No. 5358 as in my herbarium.

Aragallus galioides sp. nov.

Slender, 12 to 18 inches high, young parts silvery-silky, otherwise cinereous-villous; leaves upright, 4 to 10 inches long, the small oblong acute thin leaflets in whorls of 4, approximate but not crowded or imbricate; slender spikes of small flowers 4 to 6 inches long, not dense; bracts linear, nearly equalling the cylindric calyx, this densely villous, its subulate teeth more than half as long as the tube; pods short, oval with a long beak-like apex, the whole scarcely ¾ inch long, thin-walled, villous-tomentulose.

Meadows along Bow River, near Banff, B. C., at 4,500 feet, July and September, 1899, W. C. McCalla, in U. S. Herb. Elegant small flowered species related to *A. splendens;* the long leaves with whorled leaflets recalling leafy stems of *Galium*.

The three concluding the series are, as will be seen, from widely sundered stations, and variously allied.

Aragallus luteolus sp. nov.

Tufted, stoutish, 6 to 10 inches high, scapes well surpassing the foliage, both minutely silky-villous, almost silvery; leaflets lance-oblong, ½ inch long or more, closely approximate, of thinnish texture; scapes flexible, not striate; spikes short and broad, not dense, 1½ or 2 inches long, 8 to 15-flowered; bracts lanceolate, shorter than the calyx-tube, this cylindric, villous-tomentose with white and black hairs intermixed, teeth short, obtusish; corolla about ¾ inch long, yellowish.

Subalpine on the Olympic Mountains, Washington, July, 1900, A. D. E. Elmer; type in U. S. Herb.; fruit not known.

Aragallus bryophilus sp. nov.

Branches of caudex stout, erect, 2 or 3 inches high, apparently embedded in mosses, heavily clothed with the stipules of leaves of former seasons, these yellowish-scarious, triangular, acutish, sparsely pilose toward the apex; leaves long-petioled, 1½ inches long, the 7 to 9 leaflets oval to elliptical, hardly ¼ inch long, soft-pilose on both faces, more emphatically so beneath; scapes slender, 1 inch long, 2-flowered, the flower ¾ inch long or more; calyx dark-ferruginous-villous, cleft to the middle, the teeth lanceolate-subulate; corolla purple, the large banner deeply emarginate.

St. Matthew's Island, Bering Sea, July 10, 1891, Mr. J. M. Macoun; distributed from Herb., Canad. Geol. Surv., under No. 18,510 and the name *Oxytropis nigrescens*, but by habit and stipules extremely different from the Asian plant of Pallas and of Fischer. Type in my herbarium.

Aragallus Hudsonicus sp. nov.

Branches of the chaffy caudex and tufts of leaves and peduncles of about equal length, the whole 2 to 4 inches high; stipules tapering to a scarcely acute apex, rather densely hirsute; leaves short-petioled, the whole less than an inch long, of 27 to 33 closely approximate minute oblong leaflets, the rachis villous, leaflets sparingly pilose; scapes with a short capitiform spike of 8 to 16 middle-sized bluish flowers; cylindric calyx blackish-villous, its somewhat triangular but obtusish teeth very short; corolla ½ inch long.

Whale River, Hudson's Bay, June 24, 1896, Mr. A. P. Low; No. 14,272 of Canad. Geol. Surv., as distributed by Mr. Macoun. Type in my herbarium.

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PROCEEDINGS

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DESCRIPTION OF A NEW *EUPHONIA* FROM THE SOUTHERN WEST INDIES.

BY AUSTIN H. CLARK.

On examining a series of ten specimens of *Euphonia flavifrons* (Sparrm.) obtained by myself on the island of St. Vincent, and comparing them with specimens from Dominica, I find certain constant differences in color, which, taken in connection with the uniformly small size, seem to warrant a subspecific separation.

Unfortunately in the original description of the species (Sparrman, Mus. Carls. IV, No. 92, 1789) no type locality is given; but as it appears to be more probable that the earlier specimens came from the large and important northern islands (Guadeloupe, Dominica, and Martinique) rather than from the small and less known islands of St. Vincent and Grenada, I have decided to give a new name to the southern form, thus restricting *E. f. flavifrons* to the St. Bartholomew-Dominica group. The southern bird may therefore be known as

Euphonia flavifrons viscivora * subsp. nov.

Type from Kingstown, St. Vincent, W. I. No. 12,687, adult male, coll. E. A. and O. Bangs. October 29, 1903. Austin H. Clark, collector.

Characters.—Resembles *E. f. flavifrons* from Dominica, but is smaller, darker, and generally brighter, with the black on sides of the head replaced by dark green, the throat and forehead deeper and more orange in color, the back clearer green, and not tinged with bluish, and the underparts more yellowish, especially on the abdomen and under tail coverts. The rump is also considerably brighter, inclining to wax yellow, and not dull olive, as in the Dominica bird.

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* *Viscum*, mistletoe. This bird feeds largely on the berries of a plant called locally "mistletoe," and is therefore known on St. Vincent as the "Mistletoe Bird."

Color.—Adult male: Forehead gamboge yellow, margined posteriorly by a transverse line or bar of black; crown, occiput, and hind neck uniform light turquoise blue, this color extending down behind the auriculars to the upper breast; back, scapulars, wing coverts, and upper tail coverts uniform olive green; rump bright olive yellowish; primaries, secondaries and rectrices dusky, margined with olive green; lores black; suborbital, auricular and malar regions dark olive green, becoming lighter toward throat; chin and throat lemon yellow, brightest on chin, and shading into the green of the breast posteriorly; underparts yellowish olive green, becoming more yellowish on abdomen and under tail coverts; under wing coverts yellowish white; bill black, with basal portion of mandible grayish. Iris brown. Feet brownish gray.

Adult female: Similar, but paler and duller throughout; forehead lemon yellow, bordered posteriorly with a line of dark olive green; chin and throat paler and slightly greenish; sides of head yellowish olive green; crown and occiput slightly paler than in the male.

One specimen, apparently immature, has the blue of the head mixed with olive green. A male from Martinique and another from St. Lucia agree in color with the St. Vincent birds.

MEASUREMENTS.

Sex.	Locality.	Wing.	Tail.	Tarsus.
Male	St. Bartholomew.*	61.5	38.9	15.5
"	Guadeloupe (average of three).*	64.8	39.6	16.3
"	Laudat, Dominica.	66	44	16
"	Martinique.	63	43	14
"	" *	62.7	38.6	16
"	St. Lucia (average of two).*	61	37.6	16.5
"	St. Vincent.*	65	41.1	16
"	Kingstown, St. Vincent.	62	38	16
"	" "	62	38	16
"	" "	62	38	16
"	" "	63	38	16
"	" "	62	39	16
"	" "	62	38	16
"	" "	63	39	16
"	Grenada (average of two).*	62	38.6	16.3
Female	Guadeloupe (average of two).*	62.2	38.1	16.5
"	Dominica (average of four).*	64.5	39.6	16.8
"	Laudat, Dominica.	64	40	17
"	Martinique.*	61.7	36.1	17
"	St. Lucia (average of two).*	59.9	37.3	16.5
"	Kingstown, St. Vincent.	60	36	16
"	" "	62	37	16
"	" "	62	38	16

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*Taken from Ridgway, Birds North and Middle Am., II, p. 16, 1902.

The average measurements of male specimens from each island as brought out by this table are:

Locality.		Wing.	Tail.	Tarsus.
St. Bartholomew	(1)	61.5	38.9	15.5
Guadeloupe	(3)	64.8	39.6	16.3
Dominica	(1)	66	44	16
Martinique	(2)	62.8	40.8	15
St. Lucia	(2)	61	37.6	16.5
St. Vincent	(8)	62.5 *	38.6 †	16
Grenada	(2)	62	38.6	16.3

* Omitting the first, apparently abnormally large specimen, 62.2.

† Omitting the first specimen, 38.3.

Although the number of specimens (32) is too small to allow of any conclusive results, the birds from Martinique-Grenada may be said to be a smaller race than those from the north. Admitting the color into consideration, we find that *Euphonia flavifrons* in the Lesser Antilles shows variations comparable to those of *Vireosylva calidris*, which species is represented by the large and rather pale *V. c. calidris* from Dominica northward (a form in which, as in *E. flavifrons flavifrons*, the color of the crown and occiput tends to grade into the color of the back), while from Martinique to Grenada the form *V. c. barbadense*, smaller, clearer, and somewhat darker occurs.

I have not examined the specimen from St. Bartholomew. It may be abnormally small, or may represent still another race, as in regard to this species that island is in an apparently isolated position, no *Euphonia* having as yet been found on Saba, St. Eustatius, St. Kitts, or Nevis.

The habitat of *Euphonia flavifrons viscivora* may be given as Grenada, St. Vincent, St. Lucia, and Martinique. The range of the species is, in addition, Dominica, Guadeloupe, Antigua, Barbuda, and St. Bartholomew. Possibly it may yet be found on Nevis and St. Kitts, or on the higher altitudes of St. Eustatius, as it is a bird which is, from its small size and retiring habits, very easy to overlook.

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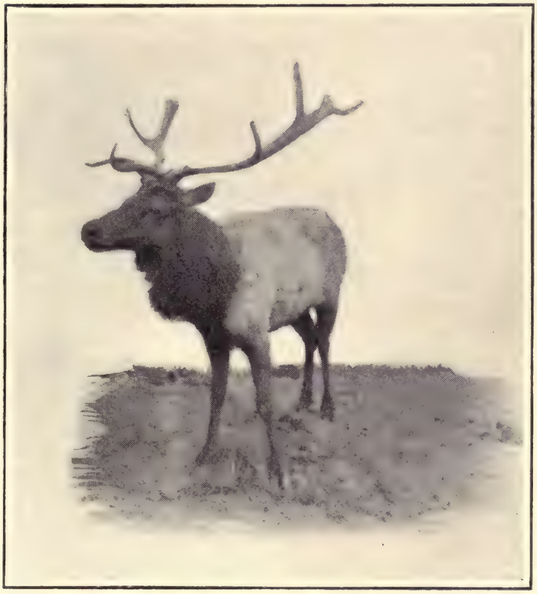

A NEW ELK FROM CALIFORNIA, *CERVUS NANNODES.*

BY C. HART MERRIAM.

During the early days in California, elk were abundant in most parts of the San Joaquin and Sacramento Valleys, particularly in and about the tule sloughs bordering the Sacramento, San Joaquin, Kings, Kern and other rivers, and Tulare, Buena Vista and Kern lakes. The encroachments of civilization have resulted in the gradual extermination of this elk over the greater part of its former range, until in recent years it has become restricted to a small area between Tulare and Buena Vista lakes, where at present the survivors are confined almost exclusively to lands included in an extensive cattle ranch (Buttonwillow Ranch) owned by Miller and Lux. Knowing that the other mammals of the hot San Joaquin Valley differ materially from their mountain relatives, and feeling confident that the elk would prove no exception to the rule, I have tried for fifteen years to obtain specimens, but until recently without success. Two or three years ago Miller and Lux presented the herd to the United States Government, through the Biological Survey of the Department of Agriculture. A park for their reception was constructed on Kaweah River in the Sequoia National Park, and on November 12, 1904, a notable drive was made for the purpose of corralling the animals. The drive was carefully planned and many of the best riders of the San Joaquin Valley took part in it. It was not a success, for the reason that the elk refused to be driven and escaped to the adjacent foothills of the Temploa Mountains. During the excitement of the chase the vaqueros roped eight or ten of the elk. Most of these died. Their skins and skulls were carefully preserved and are now in the collection of the Biological Survey in the U. S. National Museum. Comparison of these specimens with the three species of elk heretofore known from the United States (*Cervus canadensis*, *C. roosevelti*, and *C. merriami*) shows that the Joaquin animal is very different from any of them—far more different in fact than they are from one another. It is very much smaller, shorter legged, much paler in color, and has more white on the ears. Comparison of skulls shows that its affinities are with *Cervus canadensis* of the Rocky Mountains rather than with *roosevelti* or *merriami*. The accompanying illustration is from a photograph, taken by me November 12, of an old bull, apparently the leader of the band. He was roped during the drive and carried on a wagon to the corral.

The species may be known from the following description :

Cervus nannodes sp. nov.

Type from Buttonwillow, Kern County, California, No. 135,042, male, 2-year-old, U. S. National Museum, Biological Survey Collection. Collected November 12, 1904, by C. Hart Merriam and E. W. Nelson.

Characters.—Size small; legs short; coloration pale; fur of ears soft, almost woolly; white rump patch small and narrow; front of legs and feet bright golden fulvous; back and flanks varying from buffy gray, slightly washed with fulvous, to grizzled buffy whitish.

Color.—Type specimen: Head and shoulders grizzled grayish brown, only slightly washed with fulvous on neck and shoulders; back grizzled whitish buffy, becoming pale fulvous on sides; rump patch and tail soiled whitish, much smaller and narrower than in the other known species; ears varying from buffy ochraceous to ochraceous fulvous; the inner side, borders, and outer base both anteriorly and posteriorly, buffy white, the white, particularly at posterior base, much more extensive than in the other species; anterior surfaces of fore and hind legs bright golden fulvous, strikingly different from the dark brown or chestnut brown of the others; posterior aspect of fore and hind legs buffy fulvous; mane on throat well developed, long, harsh, grizzled grayish brown; dark thigh stripe (separating white of inner side from grayish fulvous of outer side) only slightly marked. An old bull is similar but has the neck all round abruptly much darker than the body. The mane also is more extensive, covering the sides of the neck as well as the throat.

An adult female collected at the same date and place (No. 135,047) differs from the type in being more fulvous above; in having the back less whitish; the rump patch whiter and more sharply defined; the throat mane less strongly developed but still well marked. Three yearlings of both sexes are in color intermediate between the male and female above described. The top of the head is more like that of the female, being fulvous instead of grayish brown. The sides of the back and flanks are dark buffy gray, becoming pale fulvous posteriorly on sides of rump and thighs.

Cranial characters.—Skull in general similar to that of *canadensis* (not broad anteriorly as in *roosevelti* and *merriami*), but smaller, lower, and notably shorter; *palatal bones decidedly longer; upper surface of supraoccipital decidely shorter.* The skull of the type, a two-year-old male, compared with the skull of a male *canadensis* of the same age from Manitoba, shows the following differences: Size smaller; fronto-parietal region more depressed; bullæ decidedly smaller; muzzle more constricted laterally behind canines; supraoccipital on top of skull shorter; encroaching much less on parietals; the parietals correspondingly longer; palatal length and length of palatal bones decidedly shorter. The palatal surface of the maxillaries and premaxillaries is of the same length in both species, the greater palatal length of *canadensis* resulting from the greater length of the palatal bones in that species. The molars and premolars are of essentially the same size in both—hence relatively larger in *nannodes.*

Antlers.—Similar in general to those of the Rocky Mountain Elk but smaller and with posterior terminal prong less strongly developed.

Measurements.—Type specimen (2-year-old male): Total length, 2,030 mm; tail vertebræ, 140; hind foot, 620.

Cranial measurements of type specimen.—Basilar length, 358 (in *canadensis* of same age, 388); zygomatic breadth, 155 (in *canadensis*, 168); occipito-sphenoid length, 79 (in *canadensis*. 90); palatal length, 230 (in *canadensis*, 255), length of palatal bones, 36 (in *canadensis*, 60); palatal floor of maxillaries, 112 in both; palatal floor of premaxillaries, 82 in both.

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TWELVE NEW WOOD RATS OF THE GENUS *NEOTOMA*.

BY E. A. GOLDMAN.

The following descriptions are published in advance of a revision of the genus *Neotoma* now in course of preparation. For the opportunity to study the unparalleled series of wood rats of the Biological Survey I am indebted to Dr. C. Hart Merriam, who had already done much work on the genus, and under whose direction the collections have been brought together. My thanks are also due to Dr. J. A. Allen of the American Museum of Natural History and Mr. D. G. Elliot of the Field Columbian Museum, for the loan of types and topotypes, and to Mr. F. W. True, Executive Curator, and Mr. Walter L. Hahn, Aid, for the use of the National Museum Collection and other courtesies.

Neotoma palatina sp. nov.

Type from Bolaños, Jalisco, Mexico (altitude, 2800 feet). Adult male, No. 90,959, U. S. National Museum, Biological Survey Collection. September 12, 1897. E. W. Nelson and E. A. Goldman. Original number 7104.

General characters.—Size large; ears small; pelage short and coarse; skull heavy; spheno-palatine vacuities closed; vomer peculiar.

Color.—Type (in worn pelage): Upperparts pale cinnamon, suffused with buffy along cheeks and sides, becoming much darker on dorsal region from abundant admixture of black hairs; underparts dull white, the basal color plumbeous except on throat, breast, and inguinal region; muzzle brownish gray; ears brownish; feet white; tail scantily haired, bicolor, blackish above, soiled whitish below.

Cranial characters.—Skull large and massive, rather smoothly rounded, well arched across anterior roots of zygomata; rostrum short and heavy; nasals wedge-shaped, reaching posteriorly to plane of orbits; braincase somewhat truncate posteriorly; interparietal large and rectangular without trace of a posterior angle; spheno-palatine vacuities completely closed by palatines; vomer prolonged posteriorly as a thin vertical plate along median line of presphenoid, partially dividing posterior nares, and ending in a point at suture between presphenoid and basisphenoid; bullæ small and heavy, somewhat pear-shaped, and pointed anteriorly.

Measurements.—Type: Length (head and body), 187; tail vertebræ (incomplete), 60; hind foot, 37.

Neotoma martinensis sp. nov.

Type from San Martin Island, Lower California, Mexico. Adult female, No. 81,074, U. S. National Museum, Biological Survey Collection. July 17, 1896. A. W. Anthony. Original number 39.

General characters.—Size medium; tail moderately long, thinly covered with short hairs; outer sides of hind legs conspicuously blackish. In color closely resembling *N. anthonyi*, but tail more scantily haired, and cranial characters very different.

Color.—Upperparts grayish brown, evenly mixed dorsally with dusky hairs, becoming lighter and somewhat suffused with pale buff along sides; underparts creamy white, the fur everywhere deep plumbeous basally; ears dusky; upper sides of forearms dusky brown; outer sides of hind legs and inner sides of ankles conspicuously blackish; feet, including the sides of the soles to point well above heels on hind feet, pure white; tail bicolor, brownish black above, grayish below.

Cranial characters.—Skull of medium size, rather smoothly rounded, high and well arched across anterior roots of zygomata; temporal ridges faintly developed and widely separated; nasals very long, abruptly narrowing posteriorly, and reaching well beyond plane of lachrymals; frontal region narrowly constricted anteriorly, broadening posteriorly, the upper surface nearly flat and without well developed lateral ridges; bullæ rather small and somewhat pear-shaped, the meatus very large and widely open.

Measurements.—Type: Total length, 342; tail vertebræ, 167; hind foot (dry skin), 35.7.

Neotoma nudicauda sp. nov.

Type from Carmen Island, Lower California, Mexico. Nearly adult female, No. 79,073, U. S. National Museum, Biological Survey Collection. October 14, 1895. J. E. McLellan. Original number 1517.

General characters.—Size medium; ears large; tail moderately long, nearly naked. Similar in general to *N. arenacea*, but color paler and cranial characters different.

Color.—Type: Upperparts pale grayish buff, tinged with brownish along cheeks and sides, the back slightly darkened by black-tipped hairs; underparts white, the fur pale plumbeous basally along sides of belly; ears grayish brown; feet white; tail bicolor, brownish on upper third of circumference, dull whitish on lower two-thirds.

Cranial characters.—Skull similar to that of *N. arenacea*, but bullæ larger; interpterygoid fossa narrower; maxillary arm of zygoma heavier; antorbital foramina larger, the outer walls broader and projecting farther forward; nasals truncate posteriorly, reaching plane of orbits; jugal rather long; dentition of the *albigula* type, but rather light; supraorbital ridges well developed and sharp as in *N. arenacea.*

Measurements.—Type: Total length, 330; tail vertebræ, 155; hind foot, 40.

Neotoma montezumæ sp. nov.

Type from Zimapan, Hidalgo, Mexico (altitude, 7500 feet). Adult male, No. 81,426, U. S. National Museum, Biological Survey Collection. October 17, 1896. E. W. Nelson and E. A. Goldman. Original number 10,275.

General characters.—Size medium; tail rather short, scantily haired, bicolored. Somewhat resembling *N. a. melanura*, but differing in darker color, and in marked cranial characters.

Color.—Upperparts dull ochraceous buff, palest on head and along sides, everywhere evenly and abundantly darkened by brownish or blackish hairs; underparts dull white, the under color of the fur plumbeous except on throat, chest and inguinal region where it is pure white; nose, upper sides of forearms and outer sides of hind legs, grayish brown; ears brownish; feet white; tail blackish above, whitish below.

Cranial characters.—Skull in general form similar to that of *N. a. melanura*, but larger and heavier; maxillary arm of zygoma decidedly heavier; nasals narrower posteriorly; dentition much heavier; first upper molar with antero-internal reëntrant angle deeper, but not so deep as in *N. mexicana;* bullæ small as in *N. a. melanura*, but more pointed anteriorly.

Measurements.—Type: Length (head and body), 181; tail vertebræ (incomplete), 91; hind foot, 39.

Neotoma nelsoni sp. nov.

Type from Perote, Vera Cruz, Mexico (altitude, 7800 feet). Adult female, No. 54,320, U. S. National Museum, Biological Survey Collection. June 3, 1893. E. W. Nelson. Original number 4935.

General characters.—Size large; tail stout, well haired, rather short; coloration dark. Related to *N. leucodon*, but differing in darker color, and important cranial characters.

Color.—Type: Upperparts pale cinnamon, heavily overlaid with smoky brown or Prout's brown, this color predominating on top of head and along back, becoming grayish brown on cheeks and middle of face; underparts dull white, the deep plumbeous basal color showing through everywhere except on a small pectoral area where the fur is pure white; tail indistinctly bicolor (nearly concolor toward tip), smoky brown above, slightly paler and grayer below.

Cranial characters.—General outline of skull similar to that of *N. leucodon;* nasals more wedge-shaped, pointed posteriorly, with a narrow emargination between the ends; palate decidedly shorter than incisive foramina (in *leucodon* about equal), and with a short posterior median projection (absent in *leucodon*); ascending branches of premaxillæ very long, the ends reaching posteriorly beyond nasals in approaching parallel lines to interorbital constriction.

Measurements.—Type: Total length, 335; tail vertebræ, 145; hind foot, 37.

Neotoma leucodon zacatecæ subsp. nov.

Type from Plateado, Zacatecas, Mexico (altitude, 7600 feet). Adult female No. 90,957, U. S. National Museum, Biological Survey Collection. September 4, 1897. E. W. Nelson and E. A. Goldman, Original number 11,641.

General characters.—Similar to *N. leucodon*, but color decidedly darker; upper lip dusky instead of grayish or whitish; skull more arched and otherwise peculiar.

Color.—Upperparts pale cinnamon, lightest on cheeks and along sides, becoming redder on rump, well darkened along median dorsal area by black-tipped hairs; chest and inguinal region pure white; belly dull creamy white; upper lip dusky; feet white; tail well haired, sharply bicolor, brownish black above, white below.

Cranial characters.—Skull similar to that of *N. leucodon*, but more arched across anterior roots of zygomata; rostrum more decurved; frontals longer; maxillary arm of zygoma heavier; upper incisors smaller.

Measurements.—Type: Total length, 358; tail vertebræ, 162; hind foot, 37.

Neotoma ferruginea ochracea subsp. nov.

Type from Atemajac, near Guadalajara, Jalisco, Mexico (altitude, 4000 feet). Nearly adult male, No. $\frac{34142}{46219}$, U. S. National Museum, Biological Survey Collection. May 21, 1892. E. W. Nelson. Original number 2653.

General characters.—Size smaller than *N. ferruginea*; coloration pale; feet pure white; tail sharply bicolor; skull small, light and elongated.

Color.—Entire upperparts light ochraceous buff, purest and brightest along cheeks and sides, darkened over dorsal region, especially on posterior half, by black-tipped hairs; underparts dingy white, washed with buffy, becoming clear, strong, ochraceous buff on pectoral region; nose and upper lip grayish white; feet pure white; tail brownish above, whitish below.

Cranial characters.—Skull similar in general to that of *N. ferruginea*, but smaller and more arched; nasals more slender, reaching posteriorly to plane of lachrymals, the ends more pointed; ascending branches of premaxillæ relatively longer, reaching posteriorly nearly to interorbital constriction; frontals longer and narrower, the sides slightly upturned.

Measurements.—Type: Total length, 348; tail vertebræ, 161; hind foot, 38.

Neotoma ferruginea solitaria subsp. nov.

Type from Nenton, Guatemala (altitude, 3500 feet). Adult male, No. 76,908, U. S. National Museum, Biological Survey Collection. December 17, 1895. E. W. Nelson and E. A. Goldman. Original number 8813.

General characters.—Similar in general to *N. ferruginea*, but smaller; fur shorter; color brighter; outer sides of forearms and hind legs not dusky as in *N. ferruginea.*

Color.—Upperparts tawny ochraceous, brightest along sides, becoming ochraceous buff on head, outer sides of forearms and hind legs, well mixed with brownish black on top of head and along back; underparts dull white owing to plumbeous basal color of fur, except a small area on chin and throat which is pure white; nose dusky; fore feet white; hind feet irregularly clouded with dusky to toes, the toes white; tail faintly bicolor, brownish black above, dull gray below, becoming brownish toward tip.

Cranial characters.—Skull similar to that of *N. ferruginea* but smaller and lighter, relatively longer and narrower; rostrum more slender; nasals narrower and more attenuate posteriorly; dentition as in *N. ferruginea* but lighter.

Measurements.—Type: Total length, 338; tail vertebræ, 156; hind foot, 35.

Neotoma mexicana madrensis subsp. nov.

Type from Sierra Madre, near Guadalupe y Calvo, Chihuahua, Mexico (altitude, 7000 feet). Adult female, No. 95,244, U. S. National Museum, Biological Survey Collection. August 26, 1898. E. W. Nelson and E. A. Goldman. Original number 12,918.

General characters.—Size smaller than *N. mexicana;* color very different; tail long, slender and thinly haired; ears rather large.

Color.—Type: Above pale cinnamon, purest along sides, strongly darkened dorsally by black-tipped hairs; underparts dull white, the hairs everywhere plumbeous basally; axillæ ochraceous buff; fore and hind feet white; tail distinctly bicolor, brownish above, whitish or grayish below.

Cranial characters.—Skull essentially as in *N. mexicana*, but smaller; bullæ relatively smaller; first upper molar with antero-internal reëntrant angle deep as in *N. mexicana*

Measurements.—Type: Total length, 320; tail vertebræ, 150; hind foot, 33.

Neotoma micropus littoralis subsp. nov.

Type from Alta Mira, Tamaulipas, Mexico (altitude, 100 feet). Adult male, No. 92,952, U. S. National Museum, Biological Survey Collection. April 10, 1898. E. A. Goldman. Original number 12,281.

General characters.—Similar to *N. micropus*, but differing in somewhat smaller size, decidedly brownish color, and slight cranial characters.

Color—Type: Upperparts nearly uniform grayish brown, moderately darkened on middle of face, top of head and along back by blackish hairs; underparts white; the fur plumbeous basally except on throat, pectoral and inguinal regions, where the hairs are pure white to roots; nose dusky; ears thinly clothed with comparatively long, brownish hairs; feet white; tail sharply bicolor, blackish above, whitish below.

Cranial characters.—In general form the skull agrees with that of *N. micropus*, but averages smaller; dentition usually less heavy; interpterygoid fossa narrower, encroached upon anteriorly by a short but more or less spinous projection from palate as in *N. micropus.*

Measurements.—Type: Total length, 366; tail vertebræ, 166; hind foot, 39.

Neotoma micropus planiceps subsp. nov.

Type from Rio Verde, San Luis Potosi, Mexico (altitude, 3000 feet). Adult male, No. 82,105, U. S. National Museum, Biological Survey Collection. January 16, 1897. E. W. Nelson and E. A. Goldman. Original number 10,461.

General characters.—Size slightly smaller than *N. micropus*; color more buffy instead of drab gray; skull flatter and less angular.

Color.—Upperparts pale buffy gray, somewhat obscured by dusky hairs which are most abundant along the median line of the back; underparts white, the fur pale plumbeous basally along sides of belly and inner surface of hind legs; nose, eyelids and ankles dusky; feet white; tail thinly haired, bicolor, brownish black above, grayish below.

Cranial characters—Skull similar in general to that of *N. micropus*, but smaller and less arched; frontals flatter above, the sides not upturned nor projecting as supraorbital shelves; braincase more smoothly rounded, bulging posteriorly below lambdoid crest; nasals attenuate posteriorly, the ends pointed and deeply emarginate; interpterygoid fossa very broad as in *N. micropus.*

Measurements.—Type: Total length, 351; tail vertebræ, 167; hind foot, 38.

Neotoma stephensi sp. nov.

Type from Hualpai Mountains, Arizona (altitude, 6300 feet). Adult female, No. 117,466, U. S. National Museum, Biological Survey Collection. July 1, 1902. F. Stephens. Original number 4192.

General characters.—Size small, fur long, soft and silky; tail slightly bushy, nearly concolor; belly pinkish buff. Similar in general to *N. lepida*, but hind foot larger, differing also in color and cranial characters.

Color.—Type: Upperparts grayish buff, palest on head, becoming pinkish buff along cheeks and sides, well mixed on dorsal region with brownish hairs; underparts strongly washed with pinkish buff, this color spreading over entire belly and more or less irregularly invading other parts; small areas on pectoral and inguinal regions, sometimes including throat, pure white; ears thinly covered with grayish brown hairs; ankles dusky; feet white; tail grayish brown above, slightly paler below.

Cranial characters.—Skull small, short and relatively broad; braincase large and smoothly rounded; frontal region broad and flat; bullæ large; first upper molar with antero-internal sulcus obsolete. Compared with *N. lepida* the skull averages larger, with decidedly longer toothrow, larger interparietal and smaller bullæ.

Measurements.—Type: Total length, 310; tail vertebræ, 139; hind foot, 31.

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A PRELIMINARY ACCOUNT OF THE DORIDIDÆ OF MONTEREY BAY, CALIFORNIA.

BY F. M. MACFARLAND.

By permission of Hon. George M. Bowers, U. S. Commissioner of Fish and Fisheries.

For a number of years past the writer has been engaged upon a study of the Opisthobranch Mollusca of Monterey Bay and the adjacent sea coast, the results of which will soon appear in a series of systematic and morphological papers upon the families represented, fully illustrated by colored plates and drawings. The present article is intended to serve merely as a preliminary list of the species of the Dorididæ found, with sufficient data to render their recognition easy by other students of the group. While occupying the Smithsonian table at the Naples Zoological Station during the months from November to April, 1902–03, I enjoyed the opportunity of studying a large number of Mediterranean Dorididæ for purposes of comparison with Pacific forms. My sincere acknowledgments are due to Professors Dohrn, Eisig and Mayer, and to Dr. Lo Bianco and to their able assistants for the many kindnesses shown to me while there. To the directors of the Hopkins Seaside Laboratory, Pacific Grove, California, Professors Jenkins and Gilbert, I would express my gratitude for the facilities afforded me and for the unfailing kindly interest which they have shown in my work.

The collections upon which the present paper is based have been made at various times during the year for several years. The most of them have beeen secured by shore collecting, the littoral fauna being exceptionally rich and the area exposed at low tide being large. Some have been taken by dredging, but extended systematic work by this means has not yet been carried out. The material secured by the dredging operations of the U. S. Bureau of Fisheries steamer *Albatross* during the spring of 1904 will be reported upon in another place.

With the exception of the early and fragmentary papers of Cooper and Stearns and the later ones of Bergh upon Alaskan Nudibranchs, the Californian Opisthobranchs are practically unknown. To this fact is due the large number of new species listed. In no group is the necessity for full and careful anatomical study more necessary as a basis for specific description than in the Opisthobranchiata. In many cases even the genus to which a specimen belongs can not be made out by general external characters alone. The practice of basing new species upon such superficial and variable characteristics as form, color and size alone can not be too strongly condemned. In every case here listed, with one exception, a careful morphological study has been made, in many instances aided by serial sections, and the complete descriptions will be fully illustrated by plates in the final papers. The general systematic arrangement as proposed by Bergh (1892) has been followed.

The following is a list of the Dorididæ thus far taken :

NUDIBRANCHIATA HOLOHEPATICA.

I. Dorididæ cryptobranchiatæ.

1. *Archidoris montereyensis* (Cooper).
2. *Montereina nobilis* gen. et sp. nov.
3. *Discodoris heathi* sp. nov.
4. *Rostanga pulchra* sp. nov.
5. *Diaulula sandiegensis* (Cooper).
6. *Aldisa sanguinea* (Cooper).
7. *Cadlina marginata* sp. nov.
8. *Cadlina flavomaculata* sp. nov.
9. *Chromodoris porteræ* Cockerell.
10. *Doriopsis fulva* sp. nov.

II. Dorididæ Phanerobranchiatæ.
  A—Polyceridæ.
    11. *Aegires albopunctatus* sp. nov.
    12. *Laila cockerelli* gen. et sp. nov.
    13. *Triopha carpenteri* (Stearns).
    14. *Triopha maculata* sp. nov.
    15. *Triopha grandis* sp. nov.
    16. *Polycera atra* sp. nov.
  B—Goniodorididæ.
    17. *Acanthodoris hudsoni* sp. nov.
    18. *Acanthodoris brunnea* sp. nov.
    19. *Ancula pacifica* sp. nov.
    20. *Hopkinsia rosacea* gen. et sp. nov.

The types of the above new species have been deposited in the U. S. National Museum. Co-types will be placed in the Museum of the Leland Stanford Jr. University and in the Museum of the Philadelphia Academy of Sciences.

1. **Archidoris montereyensis** (Cooper).

Doris montereyensis Cooper. New Species of California Mollusca. Proc. Calif. Acad. Sci., II, 1862, 204.

Doris montereyensis Cooper. On New or Rare Mollusca Inhabiting the Coast of California. Proc. Calif. Acad. Sci., III, 1863, 58.

Archidoris montereyensis (Cooper). Bergh, Malacologische Untersuchungen (Semper, Reisen im Archipel der Philippinen. II, Heft XIV, 1878, 624.

Archidoris montereyensis (Cooper). Bergh, On the Nudibranchiate Gasteropod Mollusca of the North Pacific Ocean, with Special Reference to those of Alaska. I, Proc. Acad. Nat. Sci. Phila., 1879, 107.

Body elongate elliptical, the ends nearly equally rounded, dorsum slightly arched; mouth everywhere closely set with low conical tubercles, ground-color light yellow, having a dusty appearance due to extremely minute brown, greenish-brown or black dots thickly sprinkled over the dorsum everywhere; larger patches of same color scattered over dorsum upon as well as between the tubercles and more sparingly over the branchiæ.

Length up to 50 mm.; width up to 25 mm.; height up to 12 mm.

Foot elongate, elliptical, light yellow, the anterior margin bilabiate with no median notch; head small; tentacles auriculate with an external groove; rhinophores stout, retractile into conspicuous sheaths with tuberculate margins, perfoliate with 24 to 30 leaves on each side. Branchial plumes 7, 3 or 4 pinnate, retractile within tuberculate sheath; radula colorless, broad and short, deeply grooved, the teeth in 33 rows; rachis narrow, naked; pleuræ multidentate with 42 to 49 strongly hooked compressed teeth, each bearing a strong, wing-like expansion on the inner margin of the shaft. Glans penis unarmed, with no trace of a prostate gland upon the long (28 to 30 mm.) vas deferens.

This Californian species is clearly distinct from the European *A. tuberculata* (Cuvier).

Cooper (1862) described this species superficially from 2 specimens taken in dredging at Monterey Bay, in 6 to 10 fathoms depth. Bergh (1878-79) was able to add to this a description of the radula and body measurements from 4 dried specimens from Alaska and assigned the species to his genus *Archidoris*. Further than this nothing has been published upon this species. It is quite abundant at Monterey upon the piles of the wharf at all times of the year and in rocky tide pools.

U. S. National Museum, No. 181,285. Monterey Bay, Calif.

Montereina gen. nov.

Body firm, dorsum tuberculate; tentacles long, conical; branchiæ large, tri- or quadripinnate in few divisions; large prostate gland present; vagina and glans penis unarmed.

This new genus is proposed for the reception of the following type species:

2. **Montereina nobilis** sp. nov.

Type from Monterey Bay, Calif. No. 181,284, U. S. National Museum.

Body very large, plump, arched, but little depressed; broad, elongate elliptical in outline, the ends nearly equally rounded; general ground-color a rich orange-yellow varying to light yellow in some specimens; dorsum thickly tuberculate, the tubercles slightly inflated at their distal ends; dorsum mottled everywhere between the tubercles with irregular blotches of dark brown or black, the total amount of dark coloration varying between wide limits in different individuals. Branchial plumes pinkish, tipped with white.

Length up to 20 cm.; width to 6 cm.; height to 3 cm.

Foot broad, smooth, light yellow, abruptly rounded in front, more gradually so behind, its anterior margin bilabiate, the upper lip with a slight median notch; mouth relatively small, lips fleshy, the oral tentacles digitiform or bluntly conical, directed forward, the tips curved outward; rhinophores stout, the stalk conical, the clavus perfoliate with about 24 leaves; the rhinophore sheath with tuberculate margin; branchial plumes 6, large, spreading, tri- and quadripinnate, covering the whole of the posterior dorsum. Radula broad and short, deeply grooved, colorless or nearly so, the rachis very narrow, naked; teeth in 26 rows of 55 to 62 teeth on each side;

pleuræ large strongly hooked, the wing much less strongly developed than in *Archidoris montereyensis*. Vas deferens long, slender, arising at its proximal end from the large ovoid whitish-yellow prostate gland which lies upon the upper anterior face of the anterior genital mass; glans penis unarmed; vagina unarmed.

Found in rocky tide-pools all along the coast of Monterey Bay at all seasons of the year but most abundant in the summer. Usually abundant on the piles of the Monterey wharf in company with the preceding smaller species, *Archidoris montereyensis*, from which it may be readily distinguished by the dark blotches of color of the dorsum being distributed between the tubercles and not upon them, and by the conical oral tentacles, as well as by its much larger size. The largest and most conspicuous Dorid of Monterey Bay.

3. **Discodoris heathi** sp. nov.

Type from Monterey Bay, Calif. No. 181,282, U. S. National Museum.

Body elliptical, broad, depressed, dorsum minutely tuberculate, nearly smooth. General color light yellow, becoming darker toward the median line, the dorsum sprinkled everywhere with extremely minute black or brown spots, giving the animal a general dusty appearance; a variable number of black, brown or brownish-red flecks irregularly scattered over the dorsum, the majority of them in the mid-dorsal region; mantle margin thin, wide, crenulate, extending far beyond the foot except behind; foot rather narrow, its anterior end abruptly rounded, bilabiate; upper lip deeply notched.

The head is small and inconspicuous, being almost concealed between the mantle and foot, oral tentacles long, cylindro-conical; rhinophores moderately large, clavus perfoliate with 10 to 15 leaves, the whole organ retractile into a low sheath with slightly sinuous margin. Color of the rhinophores slightly darker than the mantle, thickly sprinkled with minute dark spots.

Branchial plumes 8 to 10, tripinnate, small, spreading, whitish yellow, sprinkled with minute black spots.

Total length of animal up to 30 mm.; width, up to 15 mm.; height, to 6 mm.

Labial disc elliptical, convex, the labial armature of short, closely set rods about 42 μ long by 3.5 μ in diameter arranged in two yellowish lateral lamellæ nearly quadrangular in form on the upper half of the tube; radula colorless, twice as long as broad, not deeply grooved, the teeth in 20 rows of 36 to 42 teeth in each half row; rhachis naked, pleuræ strongly hooked, the innermost 20 to 25 in each row nearly equal in size, the hook slightly increasing in length, the shaft obliquely curved toward the median line and bearing a thin wing-like expansion on the inner side. The outermost 12 to 16 pleuræ decrease very rapidly in size, fit closely together and become reduced to thin concave plates.

Glans penis bluntly conical, short, unarmed; the vas deferens very long and narrow passing into the thick prostate gland; vagina unarmed; vestibular gland present.

Found in rocky tide-pools, rather rarely. Species named in recognition of the willing cooperation of my colleague Dr. Harold Heath in collecting Pacific Coast Nudibranchs.

4. **Rostanga pulchra** sp. nov.

Type from Monterey Bay, Calif. No. 181,292, U. S. National Museum.

Body elliptical, depressed, the sides nearly parallel, the ends of the body equally rounded, the mantle ample, concealing the whole body except the tip of the tail. General ground-color bright red, varying from light yellowish red to deep scarlet, the back sprinkled everywhere with minute brown and black spots between the papillæ; the number of these spots highly variable, in some cases being few, in others many and thickly set and often grouped into small patches thus deepening the general color of the animal to a reddish brown.

Dimensions of largest individual taken: length, 18 mm.; width, 10 mm.; height, 5.5 mm.; the average size usually found, however, is from 8 to 12 mm. in length.

Dorsum covered everywhere with small closely set hispid papillæ strengthened by divergent spicules extending from base to apex, the central portion of the apical end being sunken and surrounded by a higher margin, elevated at intervals by the spicules into pointed projections. Sides of foot nearly parallel, abruptly rounded in front, more tapering behind; anterior margin deeply bilabiate, the upper more prominent lip with a median notch; oral tentacles long, slender, tapering. General color of the ventral surface of the foot, mantle, and sides of body a lighter red than dorsum, rarely with fine black sprinklings. Rhinophores short, stout, the stalk stout, conical, prolonged above the clavus as a blunt cylindrical process, nearly one-fourth length of whole organ; clavus perfoliate bearing from 20 to 24 nearly vertical triangular leaves (10 to 12) on either side, the leaves increasing regularly in size from before backward; sheath of the rhinophore low, papillate similarly to the general dorsum; branchial plumes 10 to 12 erect, separate, completely retractile into a common cavity the margin of which is similar to that of the rhinophore. Labial armature a crescentic band of flattened hooks upon the upper half of each side of the opening, the concave border directed forward, the upper point much in advance of the lower; elements of the armature in 5 closely overlapping rows, the tips of the anterior row blunted, those of the posterior rows smaller and pointed; radula broad, colorless, the median groove deep; teeth in 65 to 80 rows, with 81 teeth in each row; rhachis naked; first pleural tooth thick and stout, the base short and broad, the hook blunt, heavy, slightly curved and bearing 8 to 11 small denticles upon its inner margin; the succeeding 10 pleural teeth with large, broad base bearing a wing-like expansion upon outer border overlapping adjacent tooth; the hook at first strongly curved and thick but increasing in length, becoming less curved from the 12th tooth outwards, the base decreasing in bulk, passing over rapidly into very long slightly curved slender elements arising from small compressed bases and bearing from 1 to 6 very long denticles upon the inner margin in the distal third of the tooth, these denticles reaching nearly to tip of tooth and giving it the appearance of being divided; outer teeth of whole radula very flexible and slender, presenting a brush-like appearance.

Glans penis unarmed, the vas deferens short, the prostate gland large thin-walled; spermatotheca spherical, very large, making up nearly two-thirds the bulk of the anterior genital mass.

Abundant everywhere along the coast in the rocky tide-pools from Monterey to Point Lobos upon a red silicious sponge which incrusts the under side of overhanging rocks and with which it is nearly identical in color.

5. **Diaulula sandiegensis** (Cooper).

Doris (*Actinocyclus?*) *Sandiegensis* Cooper. New Species of Californian Mollusca. Proc. Calif. Acad. Sci., II, 1862, 204.

Doris Sandiegensis Cooper. New or Rare Mollusca Inhabiting the Coast of California, No. II, Proc Calif. Acad. Sci., III, 1863, 58.

Diaulula Sandiegensis (Cooper). Bergh, The Nudibranchiate Gasteropod Mollusca of the North Pacific Ocean, with Special Reference to those of Alaska, II, Proc. Acad. Nat. Sci. Phila., 1880, 41.

Body soft, elliptical, velvety, the ends equally rounded, somewhat depressed; mantle extending well beyond (6 to 8 mm.) the foot everywhere except at tip of tail; mantle edge wide and thick, slightly crenulate; dorsum everywhere minutely villous and velvety, pale yellowish in color with dark brown or black rings of varying size, number and position. In general these are arranged in 2 longitudinal series on each side of the median line with from 3 to 6 rings in each row but this is subject to much variation. Small patches of brown may also occur among the rings. The general color of the dorsum may vary from a light yellow to deep brownish yellow or even chocolate.

Oral tentacles long, slender, finger-like; anterior end of foot deeply bilabiate, the upper thinner lip with a median notch; rhinophores conical, the clavus dilated, perfoliate with 20 to 30 leaves, deeply retractile into sheaths with crenulate margin; branchial plumes 6, tripinnate, retractile into sheath with prominent crenulate margin; no labial armature save a simple cuticula; radula rather broad, twice as long as wide, yellowish, the teeth in 19 to 22 rows, with 26 to 30 teeth in each half row; rhachis broad, naked; pleural teeth similar in shape, strongly hooked, compressed, a narrow wing-like expansion upon the inner side of each tooth. Glans penis unarmed; prostate gland large.

Found in fucoid zone among rocks all along the southern coast of

Monterey Bay; not abundant but has been taken at all times of the year. This species was discovered and described superficially by Cooper (1862) and was afterwards studied anatomically by Bergh (1880) upon specimens from Alaska which appear to be identical with the Monterey form.

No. 181,288, U. S. National Museum. From Monterey Bay, Calif.

6. **Aldisa sanguinea** (Cooper).

Doris (*Asteronotus*) *sanguinea* Cooper, New Species of Californian Mollusca. Proc. Calif. Ac. Sci., II, 1862, 204.

Doris sanguinea Cooper (Asteronotus), New or Rare Mollusca Inhabiting the Coast of California, No. II, *ibid.*, III, 1863, 58.

Asteronotus? sanguineus (Cooper). Bergh, Malacologische Untersuchungen (Semper, Reisen im Archipel der Philippinen), II, XVII, 1890, 917.

Body somewhat depressed, oval, the ends about equally rounded; dorsum covered everywhere with small conical tubercles, the general body-color light to dark red, sprinkled everywhere with minute black spots; on the median line immediately in front of the branchiæ a large rounded or oval black spot, another similar spot in advance of the first just behind the rhinophores. Foot abruptly rounded in front, less so behind, the sides converging posteriorly, anterior margin bilabiate.

Total length, up to 17 mm.; width, to 8 mm.; height, to 6 mm.

Tentacles short, auriform, grooved externally; rhinophores rather stout, the clavus conical, perfoliate with 12 to 15 leaves, deeply retractile into sheaths with low tuberculate margins; branchial plumes 8 to 10, simply pinnate or irregularly bipinnate, arranged in a circle, completely retractile into sheath with low tuberculate margin; oral cuticula thick; on the sides of the tube a delicate armature of extremely fine short rodlets; radula rather wide, teeth in 70 rows; rhachis narrow, naked; pleural teeth very numerous and slender, at least 70 to 100 in each half row; each tooth made up of a triangular compressed base from which arises a slender rod-like shaft, the distal end slightly enlarged and hollowed on posterior face, on its thickened external and distal margin a single series of very small denticulations which continue down the border of the shaft for varying distances, in some cases occupying the distal half of the shaft; inner teeth about .5 mm. in length, the outermost ranging down to .03 mm.

Glans penis cylindrical, blunt, its cuticle with 5 or 6 rows of small recurved hooks.

This species was first described by Cooper (1862-63) as *Doris sanguinea* in an exceedingly fragmentary manner. The form is abundant in Monterey Bay and a careful study shows that it does not belong to the genus *Asteronotus* as given by Bergh (1892) but forms the second species of the genus *Aldisa*, the other species of which, *Aldisa zetlandica* Alder and Hancock, belongs to European waters.

No. 181,277, U. S. National Museum. Monterey Bay, Calif.

7. **Cadlina marginata** sp. nov.

Type from Monterey Bay, Calif. No. 181,287, U. S. National Museum.

Body elongate, elliptical, somewhat depressed; dorsum firm, covered everywhere with low tubercles; general ground-color yellowish white, the tubercles tipped with lemon yellow surrounded by a narrow ring of white forming the center of small polygonal areas into which the dorsum is divided; mantle margin and lateral and posterior edges of foot edged with a narrow band of lemon-yellow, tips of rhinophores, branchiæ and their sheaths of the same color.

Mantle margin wide, broadly overlapping the foot; foot narrow, nearly linear, its anterior end bilabiate, the upper lip notched, thin, the lower one thick; oral tentacles short, triangular, flattened, auriform with distinct external groove; rhinophores perfoliate with 16 to 18 leaves, margin of sheath bearing low tubercles tipped with yellow; branchial plumes 6, bipinnate, the sheath tuberculate.

Dimensions of large individual: length, 45 mm.; width, 22 mm.; height, 8 to 10 mm.

Labial armature a broad yellow band of bifid hooks, quadrangular below, narrowing laterally and interrupted above; radula broad with shallow median groove; teeth in 90 rows; dental formula 47–1–47; rhachis of radula with a single series of median teeth, erect, hooked, the tips divided into 4 to 6 nearly equal small blunt denticles; pleuræ 47, the innermost one strongly hooked with 3 large denticles on its inner and 6 or 7 smaller ones on its outer margin; the remaining pleuræ of much the same shape, the tip becoming longer and more pointed, the denticles limited to the outer margin alone and increasing in number to 12; the outermost pleuræ diminishing in size, being finally reduced to compressed jagged slightly concave plates.

Glans penis short, bluntly conical, armed with hooks.

Found in rocky tide-pools of the fucoid zone all along the southern coast of Monterey Bay. Not rare.

8. **Cadlina flavomaculata** sp. nov.

Type from Monterey Bay, Calif. No. 181,279, U. S. National Museum.

Body elongate, elliptical, almost linear, depressed, bluntly rounded at the ends, less so behind than in front; dorsum thickly set everywhere with low rounded tubercles. General color yellowish white; on each side of dorsum a row of 7 to 10 small lemon yellow spots borne upon low tubercles, the first one of these spots just outside of and behind the rhinophores, the last one outside of and usually behind the branchial plumes; rhinophores black, brown or brownish-yellow, very conspicuous against the pale dorsum; mantle margin thin, broadly overlapping the foot except behind; foot linear, bluntly pointed behind, in front abruptly rounded, bilabiate, lower lip fleshy, thick, the upper one thinner; tentacles short, flattened, bluntly auriform, the external margin grooved; rhinophores rather large, erect, diverging, perfoliate with 10 to 12 leaves, clavus long, sheath margins thin and slightly tuberculate; branchial plumes small, 10 or 11, usually simply pinnate, occasionally bipinnate in part, completely retractile within a sheath with thin edges.

Length of large specimens, 20 mm.; width, 8 to 10 mm.; height, 4 mm.

Labial armature a broad light-yellow band, quadrangular below, triangular at the sides and interrupted above, its elements closely set hooks bifid at the distal end; radula small, broad with a very shallow median groove. Teeth in 77 rows; dental formula 23–1–23; rhachidian tooth massive, the hook divided into 4 to 6 long nearly equal denticles; pleuræ 23 in number, the first with a stout hook bearing 2 or 3 denticles on its inner margin and 4 to 7 smaller ones on the outer; the successive lateral teeth increasing somewhat in height and in number of denticles upon outer margin up to 12 to 15, the inner margin having none; toward the middle of the row the denticles become longer and more prominent, the whole tooth becoming sawlike in form; the outer 3 or 4 decrease somewhat in size but not so much as in the preceding species. Glans penis short, bluntly conical, and armed with minute recurved hooks; vas deferens very long of 2 portions, a proximal glandular and a distal muscular part indistinctly set off from each other.

Not rare. Found in the same localities as the preceding species. Very sluggish in movement in the aquarium. But one other species of this genus, *Cadlina pacifica* Bergh, has been described from the Pacific (Alaska). It is clearly distinct from the Monterey forms as shown by the dentition, *C. pacifica* having 67 to 85 rows of teeth with a formula of 33–1–33, the rhachidian tooth having 3 or 4 denticles on *each side* of a median hook and the denticles of the outer pleuræ ranging up to 18 to 22, the first pleura having 3 upon the inner margin and 6 or 7 on the outer.

9. **Chromodoris porteræ** Cockerell.

Chromodoris porteræ Cockerell. Three New Species of Chromodoris, The Nautilus XVI, 1902, 20.

One specimen of *Chromodoris* was taken at Pacific Grove in 1894. Colored drawings were made of it but it escaped down the overflow pipe of the aquarium and was lost before further study could be made. The same species has been taken at La Jolla, California, and its color characteristics given under the above name by Prof. T. D. A. Cockerell (1902).

Body elongate, linear, depressed, mantle about equally rounded in front and behind, mantle margin rather narrow laterally and behind, in front broad; tail not covered by the mantle save in its anterior portion. General body-color deep ultramarine blue; mantle with 2 broad longitudinal stripes of orange, entirely or incompletely united behind the branchial plume, ending in front just outside the bases of the rhinophores; in front of rhinophores a transverse arc of orange as if a continuation of the lateral stripe; a median light blue line extending from between the rhinophores to the branchiæ; margin of mantle narrowly edged with white; foot of same ultramarine blue as rest of body with a suffused median stripe of lighter blue upon dorsal surface of tail. Rhinophores perfoliate with 12 to 14 leaves, clavus slightly darker blue than the body of the animal, retractile within low sheaths with smooth margins. Branchiæ 9 to 11, simply pinnate, slightly lighter in color than the mantle, completely retractile within low sheaths with smooth margins.

Length, 22 mm. Radula? Reproductive system?

The above external characters are taken from my notes of 1894 and based upon the one specimen alluded to. The paper of Cockerell gives nothing as to the anatomy of this beautiful creature, a gap which I hope soon to be able to fill. Until this is done little can be said authoritatively as to whether or not this and the 2 other species of *Chromodoris* described by Cockerell are distinct from the 2 California species already described by Bergh (1879, 1894).

10. **Doriopsis fulva** sp. nov.

Type from Monterey Bay, Calif. No. 181,286, U. S. National Museum.

Body elongate elliptical, the mantle equally rounded in front and behind, slightly depressed, soft, dorsum with low papilla-like elevations nearly all of which bear a small central white fleck. General body-color a rich yellow, foot and under side of mantle slightly lighter, rhinophores darker, branchial plumes yellowish white; mantle margin wide, thin, crenulate, extending well beyond the foot; anterior edge of foot bilabiate, the upper lip deeply notched; mouth opening very small, pore-like; oral tentacles very small, adnate to under surface of mantle, directed forward.

Length up to 65 mm.; breadth to 30 mm.; height, 12 to 15 mm.

Rhinophores not large, perfoliate with 18 to 20 leaves, retractile into sheaths with smooth thin margins; branchial plumes 5, tripinate, wide spreading, retractile within a sheath with high flaring margin; oral armature and radula absent as in this genus. Glans penis cylindro-conical, thickly set with strongly curved hooks arranged in quincunx and continued down the cavity of the vas deferens for about .18 mm.

One of the commonest Nudibranchs in Monterey Bay. Abundant in tide-pools during the summer months, less so in the winter but never entirely absent.

It is barely possible that this species is identical with the *Doris albopunctata* of Cooper from Santa Barbara and Santa Catalina Island, the general coloration being similar. Other points in his brief description are, however, decidedly at variance, and in the absence of his original type specimens the identification is very difficult.

11. **Aegires albopunctatus** sp. nov.

Type from Monterey Bay, Calif. No. 181,281, U. S. National Museum.

Body arched, not at all depressed, robust, highest and broadest just in front of the branchial plumes and sloping rapidly into the broad bluntly rounded tail, in front more gradually; dorsum everywhere thickly set in irregular rows with short blunt tubercles, cylindrical or with slightly expanded apices; frontal margin narrow, closely set with tubercles continued behind the rhinophores as a tuberculate ridge diminishing in prominence, the dorso-lateral ridge being posteriorly marked only by an irregular row of tubercles curving upward toward the median line behind the branchiæ and meeting the mid-dorsal row of the tail; foot narrow, linear, the sides nearly parallel, in front truncate, undivided, behind tapering abruptly. Ground-color white or yellowish-white, with irregularly scattered small dark brown spots, or entirely white; dorsum and sides sprinkled everywhere between the tubercles with minute dots of pure white.

Mouth small, inconspicuous, oral tentacles small lobe-like; rhinophores simple, cylindrical, truncate, completely retractile within prominent tubercular sheaths, the margin high on the outer side, low on the inner; between the rhinophores a median longitudinal row of tubercles; branchial plumes 3, small, tripinnate, each one protected by a large irregularly tuberculate lobe on its outer side.

Length of large individual 13 mm.; width, 3.5 mm.; height, 4 mm.

In the roof of the mouth a broad thick quadrangular mandibular plate, the anterior edge thick and straight, the posterior thin and rounded; a narrow girdle of fine rod-like cuticular thickenings guarding the opening; radula broad, deeply grooved; teeth in 16 to 22 rows of 17 teeth each; rhachis narrow, naked, pleural teeth 17, similar in form, strongly hooked, the shaft with the usual thin wing-like process on the inner margin. Glans penis and canal of vas deferens clothed with very minute, densely-set hooks.

Found under overhanging rocks between tide marks. Very sluggish in movement, avoids the light and soon dies in captivity.

Laila gen. nov.

Body depressed; frontal and lateral margins narrow, set with club-shaped papillæ; rhinophores retractile; clavus perfoliate; branchial plumes few, tripinnate, non-retractile into sheath, tentacles blunt, canaliculate; a flattened sub-marginal ridge on each side of anterior end of body just behind and above the tentacles; no labial armature nor mandibles; radula not narrow, the rhachis with a single series of flattened spurious teeth; first pleural tooth slender, hook-like, the second large, the remainder smaller, flattened. Glans penis armed.

This new genus is proposed for the reception of the following described form as its type. It is allied to the genera *Triopha* Johnston and *Issa* Bergh, but differs from the first in the character of the frontal appendages and in the presence of spurious teeth upon the radula. From *Issa* it differs in the absence of mandibles, and from both in the presence of the sub-marginal flattened ridge or lobe.

12. **Laila cockerelli** sp. nov.

Type from Monterey Bay, Calif. No. 181,290, U. S. National Museum.

Body elongate, depressed, the ends rounded, back slightly convex, mantle margin prominent, overlapping the foot everywhere except behind; mantle margin bearing closely set, stout club-shaped papillæ, 1 to 6 mm. in length, arranged in short oblique rows of 3 or 4 in each, increasing progressively in size from the outermost inward; each papilla supported by an axial column of stout spicules; median portion of dorsum with numerous low scattered tubercles of varying size.

Head wide, sloping above, the frontal margin prominent, bearing papillæ similar to those of the mantle sides, the mouth opening large with conspicuous fleshy plicated lips; beneath the mantle margin on each side of the head a fleshy, flap-like sub-pallial ridge its anterior end just behind and slightly above the base of the oral tentacles; length of ridge, 2 mm., width, 5 mm., its edge smooth, the ends rounded; oral tentacles cylindrical-conical, truncate, the upper surface grooved.

Anterior margin of foot deeply bilabiate; rhinophores perfoliate with about 13 leaves, retractile within smooth margined sheaths; branchial plumes 5, non-retractile into cavity, tripinnate.

General body-color yellowish white, slightly translucent; clavus of rhinophores, processes of mantle margin and tail tipped with deep orange-red, the branchial plumes and median dorsal region occasionally flecked with the same; dorsum marked with an irregular network of transparent lines, the effect of the multitudinous spicules shining through the skin.

Total length of largest specimen, 20 mm.; width, 7 mm.; height, 6 mm.

Radula nearly colorless, broad with wide median groove. Teeth in 76 to 82 rows; rhachis narrow, with a single series of colorless flattened plates; pleural teeth 2, the first one a single slender strongly curved vertical hook fitting closely to the second pleural tooth which is strong and heavy, the shaft irregular in form bearing at the anterior end 2 strongly hooked cusps, the inner one smaller, the 2 together forming a crescentic figure; the lower (posterior) end of the shaft with a slight wing-like elevation on its outer face; uncinal teeth 10 to 13 in number, closely set, pavement-like, presenting from above an arched quadrangular outline, the first 4 with 2 pointed cusps at the posterior angles, much reduced and finally disappearing in the outer ones which become transformed into flattened plates. Glans penis long, cylindrical, armed with 10 to 12 irregular rows of minute thorn-like hooks.

Occurring under shelving rocks between tide marks along the coast. Not rare. Much smaller individuals of the same species have been collected at San Pedro, Calif. by Prof. T. D. A. Cockerell for whom the species is named.

13. **Triopha carpenteri** Stearns.

Triopa Carpenteri Stearns. Descriptions of a New Genus and Two New Species of Nudibranchiate Mollusks from the Coast of California, Proc. Calif. Acad. Sci., 1873, 78, fig. 2.

Triopha Carpenteri Stearns. Bergh, Nudibranchiate Gasteropod Mollusca of the North Pacific Ocean, with Special Reference to Alaska, II, Proc. Acad. Nat. Sci., Phila., 1880, 113.

Triopha Carpenteri Stearns. Bergh, System der Nudibranchiaten Gasteropoden, 1892, 148.

Body limaciform, robust, anteriorly obtusely rounded, posteriorly rather bluntly pointed; head obliquely flattened, lunate with a narrow frontal margin laterally continued into the less conspicuous dorso-lateral ridge and bearing along its whole length a series of irregularly lobed or tuberculate papillæ; scattered upon the minutely granuliferous dorsum many large and small simple or compound tubercles, often tending to form a median series in the anterior part of the dorsum. General body-color white, inclined to yellowish above, often sprinkled with minute white spots borne upon very small tubercles; tips of branchiæ, clavus of rhinophores, appendages of frontal and lateral margins and numerous scattered tubercles of the dorsum a deep orange color; numerous irregular blotches of orange also scattered along the sides of the animal in no regular arrangement; region of body beneath the gill-plumes darker, caused by the deep brown liver shining through the skin.

Rhinophores perfoliate, with 20 to 30 leaves, retractile into prominent sheaths, the margins of which are thin, smooth or slightly wavy in outline; Branchiæ 5, large, tri-pinnate, spreading non-retractile into sheaths; tentacles short, stout, auriform, their outer borders with a longitudinal groove; oral armature a triangular brownish-yellow mandibular plate on either side made up of closely set slightly curved blunt rods; radula broad, deeply grooved, dark amber in color; teeth in 33 rows; rhachis broad with four rows of flattened plates (spurious teeth); of these the inner 2 rows are quadrangular, the outer rows more triangular in form, the rounded and slightly thickened anterior margin being narrower than the posterior one, the outer margin prolonged backward, especially in the posterior part of the radula; pleural teeth yellow, strongly hooked, of nearly uniform shape and size, the number varying in different individuals from 9 to 18; base of each hook with a wing-like process; uncini quadrilateral in general outline, varying from 9 to 18 in number in different individuals, with a conspicuous longitudinal crest decreasing in size toward the outer uncini and disappearing entirely in the outermost ones. Glans penis armed with minute thickly set hooks.

Length of large individual, 60 mm.; greatest height, 29 mm.; greatest width, 15 mm. Maximum height of dorso-lateral processes, 3 mm.

Found on brown kelp of the fucoid zone and in rocky tide-pools everywhere along the coast of Monterey Bay. The commonest Nudibranch of the region and one of the most conspicuous.

The fragmentary description of Stearns (1873) is based entirely upon external features but is amply sufficient to render certain the indentification of living specimens, especially as they are taken from the same locality as that from which Stearns secured his original specimens. The structure of the radula shows that it is distinct from *T. modesta* Bergh, with which it has been united by the latter author in his paper upon Alaskan Nudibranchs.

No. 181,291, U. S. National Museum. Monterey Bay, Calif.

14. **Triopha maculata** sp. nov.

Type from Monterey Bay, Calif. No. 181,276, U. S. National Museum.

Body limaciform, the back passing insensibly into the sides save for the line of processes which indicate the boundary. Sides slightly compressed, foot linear, bluntly rounded in front, less so behind; head flattened, sloping to the wide semicircular frontal margin which bears a fringe of from 10 to 12 short stout processes, each branching at its distal end into several blunt or knob-like divisions each of which may be branched in turn; dorsolateral margin with a similar series of 4 to 6 short branched processes continuous forward into the frontal marginal series; tail rapidly sloping from branchial region, highly arched; color of dorsum and sides yellowish brown, varying from light to dark, thickly set everywhere with small bluish white oval spots each forming the center of a very low polygonal eminence bounded by very narrow orange yellow lines upon the dark brown background; foot below orange-yellow shading off above on the sides into the deeper brown of the dorsum; frontal and dorso-lateral processes and tips of branchiæ, margin of rhinophore sheaths and clavus bright orange-red or vermillion; oral tentacles auriform, deeply grooved on upper side, truncate; rhinophores stout, perfoliate with about 18 leaves, retractile into high sheaths with smooth or slightly crenulate margins; branchiæ 5, tripinnate, low, wide spreading; mandibular plates dark yellow, triangular, made up of short flexible blunt rodlets; radula broad, deeply grooved, light yellow; teeth in 14 rows; rachis broad with 4 series of flattened plates, the 2 innermost rows being quadrangular in shape, the anterior margin smooth, thickened, the 2 outer rows flattened, triangular, the central region more or less thickened and the lower inner angle occasionally prolonged into a slight cusp; pleuræ 4 or 5, large, strongly hooked, of nearly the same size and shape; uncini 7 or 8, the first ones slightly prismatic in form gradually becoming reduced to flattened plates; a well developed slightly oblique crest directed toward the median line is borne by all except the outermost two or three uncini. Glans penis armed with thickly set hooks.

Measurements of the longest specimen taken: length, 22 mm.; width, 10 mm.; extreme height, 11 mm.

Abundant in tide-pools all along the coast of Monterey Bay.

15. **Triopha grandis** sp. nov.

Type from Monterey Bay, Calif. No. 181,283, U. S. National Museum.

Body large, not depressed nor compressed, plump, sloping rapidly backward from heart region to tip of short blunt tail, more gently forward; head flattened above with prominent semicircular frontal margin bearing 10 to 12 tuberculate or branched processes; dorso-lateral margin with 4 to 6 similar processes; dorsum arched, smooth, of a yellowish brown color flecked everywhere with bluish spots or entirely plain, the tips of the processes of frontal and dorso-lateral margins, tips of branchiæ and tip of tail yellowish-red; foot linear, rounded in front, tapering to blunt tail behind; tentacles blunt, auriform, 3 mm. long; rhinophores rather large, perfoliate with about 20 leaves, retractile within conspicuous smooth-margined sheaths; branchia 5, tri- and quadripinnate, wide spreading.

Length of largest specimen: 80 mm.; width, 25 mm.; height, 30 mm.

Mandibles elongate triangular, light yellow, much reduced in size, made up of short slender slightly curved rodlets; radula broad, deeply grooved, the teeth deep amber in color; rachis broad with 4 series of flattened plates, the 2 median rows nearly equilaterally rectangular, thickened transversely in anterior half into a cutting ridge from which a fainter longitudinal ridge extends toward the anterior margin, the plates of the 2 outer series triangular and bearing a heavy blunt cusp sloping gradually forward on inner posterior portion; pleuræ 7 or 8 in number, strongly hooked of nearly equal size, with small wing on basal portion of shaft; uncini 8, prismatic, flattened, the inner 4 of nearly the same size, the outer 4 rapidly decreasing, the outermost being nearly rudimentary, each bearing a low longitudinal wing-like crest projecting toward the median line. Hermaphroditic duct very long, together with its slightly larger ampulla measuring about 60 mm. in an average specimen; the spermatic duct passes into the large, flattened prostate gland almost at its origin and beyond this gland dilates into the long, cylindro-conical ampulla, 5 mm. in length by 2 mm. extreme diameter at proximal end; glans penis and distal end of vas deferens lined with closely-set minute hooks; spermatotheca very large, 10 mm. in diameter, spermatocyst elongate, pear-shaped.

This species has been taken only upon the brown kelps, *Nereocystis* and *Macrocystis*, at some distance from shore. It has never been taken in tide-pool collecting where the 2 above described species are common.

16. **Polycera atra** sp. nov.

Type from Monterey Bay, Calif. No. 181,278, U. S. National Museum.

Body limaciform, smooth, plump, highest in cardiac region; head rather high, sloping in front, expanded into a moderately wide horseshoe-shaped frontal margin bearing 4 long slender processes; at the sides below the rhinophores this frontal veil is slightly dilated and bears 1 or 2 short pointed, angular processes, laterally it is continued into a more or less conspicuous dorso-lateral ridge highest in the branchial region where it bears

1 or 2 compressed pointed tubercles; behind the branchiæ the 2 lateral ridges unite in a low median crest to tip of tail; branchiæ 8, simply pinnate, non-retractile, tallest in front, decreasing regularly in size from in front backward; rhinophores stout, without sheaths, perfoliate; oral tentacles very short, lobiform; foot linear, the anterior angles prominent; general ground-color black, the dorsum and sides with numerous longitudinal rows of yellow spots, more or less confluent into continuous lines, the intermediate spaces between the spots of each row greyish, also the basal portion of frontal veil and the foot of same color; mandibles light yellow, very strong, each divided into a ventro-anterior cutting portion and a dorsolateral arched wing; radula amber to dark brown in color, rather deeply grooved; teeth in 9 or 10 rows, the half rows not in a straight transverse line; rhachis naked; pleuræ 2, unequal, the first smaller than the second, alike in form, the shaft stout, flattened slightly, bearing a broad triangular wing directed toward the median line; the hook broad, large, bent toward median line; length of first tooth, 3 mm., the second .412 mm.; uncini 3, prismatic, triangular in section decreasing in size from within outward; rarely a fourth rudimentary uncinus may be present. Glans penis closely set with minute hooks arranged in rows.

Length of animal, up to 23 mm.; width to 6 mm.; greatest height, 7 mm.

Found on red algæ (*Gigartina*) in rocky tide-pools all along the southern coast of Monterey Bay; abundant.

17. **Acanthodoris hudsoni** sp. nov.

Type from Point Pinos, Calif. No. 181,289, U. S. National Museum.

Body plump, highly arched, slightly higher and broader in front than behind, oval; dorsum soft villous, the papillæ short, thickly set, bluntly conical; mantle margin broad, thick; general ground-color clear translucent yellowish-white or pinkish, the papillæ and branchiæ tipped with lemon-yellow, the mantle edged with the same color; head wide, the oral tentacles broad triangular, a wide median anterior notch between them; foot broad, rounded abruptly in front, much less so behind; rhinophores long, tapering, clavus recurved; perfoliate with about 24 leaves, the length of stalk and clavus nearly the same, retractile into low sheath with papillose margin; branchiæ 5, bipinnate, without sheath, widespreading; pharyngeal crop large, hemispherical, very thick-walled; labial armature a pavement of minute hooks upon the lower and lateral walls of opening; lowermost portion free from hooks and bearing a broad slightly concave cuticular plate, pointed behind, and forked anteriorly into 2 blade-like processes which project beyond the margin of the opening, its total length being about .288 mm.

Radula very narrow, deeply grooved; teeth in 27 rows; rhachis very narrow, naked; first pleural tooth very large, upright, compressed, its base quadrangular in outline, the posterior border thin and wing-like, overlapping the succeeding tooth; anterior lower margin very strongly thickened, rounded; the upper anterior margin of the base prolonged upward into a strong nearly straight hook, the upper inner margin of which bears a series of 5 to 7 denticles decreasing in size from above downward; in the most anterior teeth of the radula the denticles occasionally number 10 or 11, the lowermost 4 or 5 being extremely small. The remaining 5 or 6 pleuræ are small and of nearly the same size, obliquely placed, upper margin prolonged into a slightly compressed blunt hook with a thin keel-like plate extending from its posterior median line to base, general shape being somewhat similar to first plural tooth. Total length of average first pleural tooth .370 mm., of the remaining pleuræ .05 mm. Glans penis armed with very minute hooks.

Taken in tide-pools at extreme low water near Point Pinos, the southernmost point of Monterey Bay; rare.

Species named in recognition of the able work of my friend Capt. Chas. B. Hudson, Artist of the U. S. Bureau of Fisheries.

18. **Acanthodoris brunnea** sp. nov.

Type from Monterey Bay, Calif. No. 181,293, U. S. National Museum.

Body outline oval, convex, broadest in front in region of rhinophores; mantle thickly set everywhere with blunt conical tubercles, its mantle broad and thick.

General color of dorsum brown, flecked with irregular blotches of black; between the tubercles numerous small spots of light lemon-yellow, the mantle edged with same color; tips of branchiæ lemon-yellow; rhinophores deep, blue-black, tipped with yellowish white; ventral surface yellow sprinkled with fine black dots.

Total length, 19 to 22 mm., width, 9 to 15 mm.; height, 7 to 9 mm.

Head broad, continued laterally into the wide flat oral tentacles; foot oval, nearly quadrangular, both ends bluntly rounded; rhinophores long, cylindro-conical inclined outward and forward, perfoliate with 20 to 28 leaves, the lower ones in front only, retractile into low sheaths with lobed margins; branchiæ 7, wide-spreading, bipinnate, without sheath; pharyngeal crop large, spherical, constricted longitudinally into 2 symmetrical sides; labial armature an incomplete band of mosaic-like hooks incomplete above; at the lower margin of the armature a single flattened slightly concave longitudinal plate, its margin blunt and freely projecting in front, extending across the whole labial armature; radula narrow, the teeth in 24 to 28 rows, light yellow; rhachis very narrow, naked; first pleural tooth similar in form to that of the preceding species but decidedly smaller being but .342 mm. in total length; upon its upper posterior border a squarish thickened shoulder directed obliquely upward; inner border of the hook with a series of 14 to 19 denticles; remaining 6 or 7 pleuræ small, obliquely placed and decreasing regularly in size from within outward; the first ones of these outer plates bear a flattened thickened dorsal border with a thin keel-like expansion below, the outer ones reduced to mere flattened plates. Glans penis armed with minute hooks.

Dredged off hard sandy bottom in about 10 to 20 metres depth near Monterey; rather rare.

19. **Ancula pacifica** sp. nov.

Type from Monterey Bay, Calif. No. 181,280, U. S. National Museum.

Body slightly compressed, smooth, limaciform, highest in front of branchiæ, tapering behind to tip of the long pointed tail, in front sloping less rapidly to the high rounded head. General ground-color clear translucent yellowish-white, a narrow median orange line on dorsum from between rhinophores to tip of tail, interrupted by the branchiæ; upon the indistinctly marked dorso-lateral margins a similar line extending from rhinophores backward, interrupted by the extra-branchial appendages and prolonged for a very short distance beyond the last one.

Head bluntly rounded, the tentacles slender, short and blunt; Rhinophores without sheaths, large, perfoliate, with 9 leaves. At the base of the rhinophore two long slender finger-like processes, tipped with orange, extending obliquely forward and outward, nearly as long as the whole rhinophore; branchiæ 3, bipinnate, in part tripinnate, without sheaths, tipped with orange; on each side of the branchiæ on the dorso-lateral margin are borne 4 blunt club-shaped processes dilated above, their distal third light yellow.

Length of largest individual taken, 16 mm.; width, 2 mm.; height, 3.5 mm.

Pharyngeal crop spherical, prominent, connate; labial armature strong, of flattened blunt minutely serrulate hooks; radula narrow, colorless, the teeth in 35 rows increasing in size from front to back, the posterior teeth being twice the size of the anterior ones; rhachis narrow, with a single series of flattened quadrangular plates; these plates absent in the first 8 to 10 rows but constant in the remaining portion; pleural teeth 2, the innermost large with irregular base and concave triangular vertical body placed slightly obliquely to the median line; its inner margin thickened and bearing 11 to 17 sharp recurved denticles, and terminating above in a strong hook; the outer pleural tooth triangular, thin below and thicker above, terminating in a strong apical hook. Glans penis with about 15 rows of extremely small hooks.

Found on hydroids and bryozoa in tide-pools along southern shore of Monterey Bay; rare.

Hopkinsia gen. nov.

Form of body elongate-oval, very much depressed; the dorsum thickly set with long papillæ—simple or occasionally forked; pallial margin not set off from the sides of the body but sloping gradually down into the foot without any distinct boundary, anteriorly continued into a broad velar expansion formed by the fusion of the labial tentacles in front; rhinophores non-retractile, perfoliate; branchiæ several, separate, simply pinnate plumes arranged in a horseshoe-shaped arc; the foot broad, its margin thin, undulating, in front deeply emarginate, behind forming a short broad blunt tail; head broad, its tentacles very broad and thin, auriculate at the outer posterior angles, in front united into a veil with undulating margin; labial armature a ring of very short thickened rods; radula very narrow, the rhachis naked; the first pleural tooth long, erect, hooked, the outer one flattened, horizontal, denticulate. Glans penis armed.

This new genus is dedicated to Mr. Timothy Hopkins, through whose generous interest in Biology the foundation of the Hopkins Seaside Laboratory was rendered possible. Its type is the following new species.

20. **Hopkinsia rosacea** sp. nov.

Type from Monterey Bay, Calif. No. 181,275, U. S. National Museum.

General body outline elongate-elliptical, the ends abruptly rounded; mantle firm, densely spiculate, much depressed, sloping gradually outward to the thin margin of the foot, no mantle margin being present; foot broad, abruptly rounded behind, in front with a broad triangular notch with slightly thickened margin, the remaining margins thin and undulating; head broad, the oral tentacles very broad and united in front forming a thin velar expansion with undulating margin, the rounded posterior angles slightly auriculate; dorsum thicky set everywhere with long gently tapering cylindrical soft papulæ, the tips pointed or occasionally branched, many one-half to two-thirds the length of the whole animal; rhinophores perfoliate, cylindro-conical, without sheaths, perfoliate with about 20 leaves, the clavus making up three-fourths of whole rhinophore; branchiæ 7 to 14, erect, simply pinnate, separate, arranged in a semi-circle or horseshoe-form, the ends directed backward; reproductive openings inconspicuous, on right side opposite rhinophores just below the outermost row of papillæ.

Color everywhere a beautiful deep rose pink.

Length of large individual, 29 mm.; width, 16 mm.; height of body alone, 5 mm.; length of longest dorsal papillæ, 18 mm.

Pharyngeal crop strong, ellipsoidal, attached by a very short narrow petiole; labial armature a ring of short thick rodlets in tesselated arrangement, width of armature, .4 mm; radula narrow, the teeth in 16 rows; rhachis very narrow, naked; pleural teeth single erect, long, flattened, the base triangular, broad forming about one-third of whole length, the shaft flattened blade-like, at the distal end a small blunt hook, total length, .63 mm.; the single uncinal tooth is much smaller, thin, depressed, triangular, nearly horizontal, the posterior margin more or less pointed and irregularly denticulate, length, .08 or .09 mm.; greatest width, .076 mm. Prostate gland very large, forming one-half of whole bulk of anterior genital mass; glans penis armed with minute hooks.

Occurring under shelving rocks between tide-marks all along the coast from Monterey to Point Lobos; not rare.

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SOME WEST AMERICAN RED CHERRIES.

BY EDWARD L. GREENE.

According to standard treatises upon North American general systematic botany, the later as well as the earlier, we have in the United States and Canada only two, or possibly three species of genuine cherry; that is red-fruited kinds, bearing their flowers in subumbellate or corymbose short clusters, as distinguished from the choke cherries—genus *Padus*—the fruits of which are almost or quite black, and are borne in long cylindric racemes. Our true cherries are supposed to be *Cerasus Pennsylvanica* of the Atlantic slope of the continent, and *C. emarginata* of the vaster and far more varied regions lying between the Rocky Mountains and the Pacific Ocean; two species, one for the Atlantic and one for the Pacific slope.

That *C. Pennsylvanica*, one and indivisible as a species should range from Newfoundland to Florida, and from New England to Colorado, is a proposition not easily accepted. But that *C. emarginata* or any other species of tree or shrub so highly organized, should occur all the way from the humid woodlands near the sea at Puget Sound, down to the heated and dry hills of the interior of California or the still more desert regions of southeastern California, Arizona, Utah and the Mexican border—this is beyond the belief of any botanist familiar with those extreme diversities of soil, altitude, humidity and heat that mark different sections of the Pacific slope of the continent, and the Great Basin.

There was published in Hookers' Flora Boreali-Americana, some seventy years since, two new cherries from the Columbia River, *C. emarginata* and *C. mollis.* Some twenty years later Dr. Kellogg, of San Francisco, assuming the cherry-bush of the San Francisco Bay region to be the *C. emarginata* of Douglas, named as new the red cherry just then discovered to be indigenous to middle elevations of the great Sierra Nevada. Precisely what Dr. Kelloggs' *C. glandulosa* was, one can not determine, no fewer than four species of the genus being now recognizable as inhabiting the Sierras of middle California; but that is unimportant, since the name he assigned his species does not hold.

In 1891, having seen the red-cherry trees and shrubs of the Columbia, and studied them on their native soil, I was able to perceive that the shrub of the hills of middle western California could not be referred to either of the Columbian species, and I described it in the Flora Franciscana as new, under the name *C. Californica.*

In 1903 there were sent in from the Mogollon Mountains of southern New Mexico, some branches with good foliage and ripe fruits of a cherry the investigation of which has led me to examine with care a large amount of herbarium material of these western red cherries lying in the National Herbarium, all of it under the name of *C. emarginata.*

Noticing in the herbarium even, what I had long since observed in the western field, considerable differences as to the size and outline of the drupes, I proceeded to extract and cleanse the nuclei or stones of these from different regions, finding to my great surprise that in these there seemed to reside good specific characters. I say to my surprise, because throughout the genus *Cerasus* as heretofore known, the stones are smooth and nearly or quite orbicular, hence not at all available for purposes of specfic diagnosis. How very different the case is here, in these West American cherries, the descriptions following will show.

Cerasus crenulata sp. nov.

Shrub with rather rigid copiously leafy branches puberulent the first and second seasons, later glabrous, grayish; leaves elongated, seldom with any hint of the obovate, on fruiting branches oblong or elliptic-oblong, about 1½ inches long including the slender and not very short petiole, obtuse or acutish, never emarginate, obviously and evenly crenulate, neither glabrous nor yet very distinctly puberulent, only the midvein conspicuous, basal gland rarely one and small, usually none, those of sterile shoots 2 inches long or more, exactly lanceolate, acute, subserrate-crenulate, usually with 2 small but well developed glands at the junction of blade and petiole; corymbs short-peduncled, 4-flowered, pedicels and rachis minutely hirtellous; calyx with glabrous campanulate tube and somewhat hairy truncate or emarginate, often more or less erose teeth; drupes ovoid; stone ovoid, 2½ or 3 lines long, obtuse at both ends, obtusely and rather obscurely low-rugose.

Mogollon Mountains, New Mexico, at 8,000 feet, Aug. 23, 1903, O. B. Metcalfe, as to the fruiting specimens, those in my herbarium to be taken as the type. The flowering specimens are from a not far distant locality in the Black Range, by the same collector, in the spring of 1904. The half grown leaves of these have a somewhat obovate-oblong outline, and it is possible that they may prove to be of another species.

Cerasus arida sp. nov.

Evidently a low shrub, the stout branches remarkably naked as to foliage, the bark of a dull dark-brown; leaves and flowers borne very sparsely along short lengths of the season's growth of the main branches, or a few on some of the stout gnarled lateral branchlets, but these mostly only leafy; all parts glabrous; leaves rather dull-green, 1 to 1½ inches long, obovate-oblong, obtuse or acutish, very faintly subserrate-crenulate; glands at the very base of the blade large and obvious though often one only; corymbs often represented by a solitary pedicel and flower, the largest only about 5-flowered; calyx-tube sub-campanulate; petals small; fruit unknown.

Borders of desert at eastern base of the San Bernardino Mountain, Calif. S. B. Parish, June, 1894. In the nakedness and gnarled aspect of this shrub it recalls the genus *Peraphyllum*. Some of the lateral twigs an inch long represent a six or seven years' growth.

Type in U. S. Herb.

Cerasus prunifolia sp. nov.

Shrub stout and rigid, the short branches grayish and glabrous after the second season, at earlier stages very glaucous, as well as minutely hirtellous-villous, this pubescence also clothing the rachis of the short and almost corymbose 5 to 8-flowered raceme, as also the pedicels and calyx; small early leaves round-oval, 1 inch long, the later ones exactly obovate, short-petioled, 1½ to 2¼ inches long, 1¼ inches broad above the middle, obtuse or acutish, crenulate, glabrous above, hairy beneath along the veins, less so between them, one sub-basal gland usually present but small, sometimes 2, as often none; calyx-tube campanulate, 10-striate, the deflexed oblong-oval segments nearly equalling the tube; fruit unknown.

At 8,000 feet in the mountains of Fresno Co., Calif., Hall & Chandler, June, 1900, distributed to U. S. Herb. under No. 385. Remarkable for broad leaves like those of a plum tree.

Cerasus rhamnoides sp. nov.

Larger than the last, rather more pubescent, some downy hairiness apparent on young branches; leaves oval to obovate-oblong, the larger 2½ inches long, apt to be acutish, crenulate, both midvein and pinnate veins obvious beneath; corymbs sub-sessile, about 5-flowered; drupes oval; stone elongate-ovoid, 3½ lines long, acutish at apex, margin on the one side little elevated, the whole surface smooth.

Mud Springs, Amador Co., Calif., Geo. Hansen, 1893, being his No. 1474, as in U. S. Herb. The only western true cherry known to me of which the stones are smooth. They are also remarkably long and narrow. The foliage is larger than in other species of the Sierra Nevada, and resembles that of *Rhamnus Californica*.

Cerasus Kelloggiana sp. nov.

Cerasus emarginata Greene, Flora Franciscana, 50, in part, not of Douglas; probably *C. glandulosa* Kell., Proc. Calif. Acad i, 59, 1855, not of Loiseleur, 1818.

Shrub with slender red-brown branches glabrous, at least after the first season; leaves oval or obovate on fruiting branches, lanceolate on sterile shoots, serrulate, 1 to 2 inches long, glabrous above, scarcely pubescent beneath except along the veins, even here only sparingly so; corymbs short, subsessile, 4 or 5-flowered; calyx-tube campanulate, segments short, obtuse; drupes small, round-ovoid, scarlet; stone ovoid, barely 3 lines long, mucronately acute at apex, slightly one-sided by a narrow obtuse margin, very distinctly rugose around the base, the wrinkles faint above, though obviously anastomosing.

Types: Mrs. Austin's specimens of 1896 in U. S. Herb., the flowering ones from mountains east of Chico, California, collected in June; the fruiting, from near Quincy, in September, both from the middle Sierra Nevada. Another sheet is from a little southward of these localities, namely at Emigrant Gap, this by M. E. Jones, June 28, 1882.

It was from this region that Dr. Kellogg had his *C. glandulosa;* but that it was this present species must remain doubtful. His description seems to call for a shrub more pubescent, even as to the branches, than anything now known from that part of California; though that may not be of so much importance.

Cerasus padifolia sp. nov.

Shrub glabrous in every part except the caducous stipules, these in their time glandular ciliolate; leaves of flowering branches quite copious, 1 to 1¾ inches long, obovate-oblong, obtuse, tapering to the short-petiole, minutely crenulate, the midvein beneath conspicuous, the pinnate veins less so; corymbs fastigiate, about 7 to 9-flowered, on peduncles of ½ inch or less, the pedicels rather longer; calyx-tube turbinate, one-third longer than the deflexed segments, these oblong-ovate, very obtuse or even truncate; petals not large, round-obovate above the tapering base.

Foothills at Carson City, Nevada, June 2, 1897, Marcus E. Jones. Type in U. S. Herb. Though in flower only, the specimens, by their ample fastigiate inflorescence and long slender calyx-tube with short segments, refuse to be consociated with those of any other western cherry.

Cerasus obliqua sp. nov.

Slender red and shining leafy branches nearly glabrous, clothed with only sparse appressed hairs; leaves of fruiting branches mostly obovate-oblong and obtuse, rarely emarginate, crenulate, 2 or 2½ inches long, glabrous above, sparsely short-hairy beneath both along the veins and elsewhere, those of sterile branches lanceolate, acutish, not larger than the others; flowers not seen; drupe evidently subglobose; stone obliquely ovoid, obtuse at both ends, prominently but obtusely rugose, inequilateral at base by the strong development of thick margin below the middle.

Known to me in but a single sheet of specimens in U. S. Herb. obtained at Oroville, Calif., Oct. 2, 1896, by H. E. Brown. Strongly marked by the characters of its pubescence and oblique thick-margined stones; and these specimens are the only ones known or heard of by me of any cherry from the plains or foot-hills of the interior valley of California.

Cerasus parvifolia sp. nov.

Slender shrub, either fastigiately or more widely branching; branches red-brown and polished, puberulent at first, when mature glabrous, copiously leafy; leaves small, short-petioled, those of fructiferous branches cuneate-obovate to oblong-cuneiform, ½ to 1 inch long, thinnish, obtuse but never emarginate, finely crenulate, those of sterile shoots larger, 1 to 1¼ inches long, broadly elliptic, acute, all faintly puberulent when young, still more obscurely so in age, notably white-venulose beneath, suprabasal glands mostly wanting altogether, occasionally present in reduced form; flowers unknown; drupe ovoid; stone about 3 or 3½ lines long, narrowly ovoid, very acute at apex, equilateral, one side with a broad flat marginal development, the other showing a mere impressed line, surface with several traces of longitudinal ridges radiating about the base but soon vanishing, otherwise smooth, or wholly smooth, and showing no traces of rugosity.

Known only from the vicinity of Mt. Shasta, California, the specific type being best represented in a sheet collected on the south side of Mt. Shasta, July, 1897, by H. E. Brown, being sheet No. 324,667, U. S. Herb. In this the diminutive spiraea-like leaves are of the smallest, and the stones of the drupes are perfectly smooth, though less emphatically acute than in those collected by Mr. Pringle somewhere in the same general region, August 28, 1882. In his specimens the stones, which are very acute, are a little larger, and show at base the hints of rugosity described. Other specimens from "Mt. Shasta and vicinity" were collected by Dr. Palmer in July, 1892, but these are past flowering, yet without mature fruit.

Cerasus obtusata sp. nov.

Shrub stoutish and with rather rigid copiously leafy branches, and glabrous in all its parts; leaves of fruiting branches narrowly obovate, obtuse, near emarginate, very obscurely subserrate-crenulate, 1 to 1¼ inches long, only the midvein prominent, seldom with even a faint trace of one suprabasal gland; corymbs short, subsessile, about 4-flowered; flowers not seen; drupe scarlet, subglobose; stone ovate, even broadly so, 2½ lines long, abruptly acutish at apex, marked with a few prominent though not acute rugosities.

The type is from Silvies, on the border of the arid interior of southeastern Oregon, by David Griffiths and E. L. Morris, August, 1901, sheet No. 402,822, U. S. Herb. The only other specimens of *Cerasus* from this climatic region seen by me are from Steins Mountains, both collected in 1896, one by Mr. Coville, the other by Mr. Leiberg. They are evidently from different sections of this isolated mountain range, and seem as if representing each another species; but the specimens were taken at the wrong season of the year for showing either flowers or fruit. They are past flowering altogether, while in neither is the fruit full-grown.

C. emarginata, the counterpart of *C. obtusata* in northern Oregon and Washington, is not glabrous, its leaves are comparatively narrow and twice as large, also emarginate, and with well developed suprabasal glands, while its nucleus has never been described as otherwise than smooth.

Cerasus trichopetala sp. nov.

Stoutish branches glabrous, the younger red and shining, the older gray; leaves at flowering time obovate-elliptic, very acute, about 1½ inches long, obscurely subserrate-crenulate, glabrous; flowers large, in subsessile corymbs of about 5, the rachis, pedicels and calyx glabrous, the large round-obovate petals appressed-villous externally at base and up and down the middle part; mature foliage not seen; stone obliquely ovoid, the thick ventral margin much elevated, the rugosity obtuse, low, obscurely reticulate.

Type in U. S. Herb., from Columbia Falls, Montana, by R. S. Williams, in flower May 24, 1894.

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PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

PRELIMINARY DESCRIPTIONS OF THREE NEW BIRDS FROM ST. VINCENT, WEST INDIES.

BY AUSTIN H. CLARK.

On working up a collection of birds obtained by myself on the island of St. Vincent during 1903–04, I find three forms apparently well worthy of recognition. All three of these birds appear to be rare in collections, which possibly accounts for their not having been previously characterized. Two (*Urubitinga anthracina cancrivora* nob. and *Holoquiscalus dispar* nob.) are only known from St. Vincent, although the former possibly occurs on St. Lucia and Dominica; *Buteo antillarum* nob. has an extensive West Indian range, and may be found to be separable into several local races.

Holoquiscalus dispar sp. nov.

"BARBADOS" BLACKBIRD. BEQUIA SWEET.

Type. From Kingstown, St. Vincent, Oct. 31, 1903. No. 12,802, female adult, coll. E. A. and O. Bangs.

Characters. Bill much as in *H. inflexirostris* of St. Lucia; longer and more compressed than in *H. martinicensis* of Martinique. The male is similar in color to the males of both these species, but the female is very different from either, being even darker than the female of *H. fortirostris* of Barbados, though somewhat like it in color. In size the bird is a little smaller than *H. martinicensis*.

MEASUREMENTS.

	Culmen mm.	Wing mm.	Tail mm.	Tarsus mm.
No. 12,801 Topotype: adult ♂	28.2	118.0	106.5	33.2
No. 12,803 " " ♀	24.0	93.0	——	29.6
No. 12,802 Type " ♀	23.0	92.5	77.5	30.0

Distribution. Island of St. Vincent; confined to the vicinity of Kingstown, and neighboring windward district.

Buteo antillarum sp. nov.

ANTILLEAN CHICKEN HAWK. GREE-GREE.

Type. From Chateaubelair, St. Vincent (British West Indies), Sept. 24, 1903. No. 12,852, male adult, coll. E. A . and O. Bangs.

Characters. Somewhat similar to *Buteo platypterus* Vieill., but smaller and more rufous, the rufous edgings to the feathers above wider, the underparts more rufous, and the thighs buff, more thickly barred than in *B. platypterus.* In the young the ground color below is buffy white, becoming darker on the abdomen and thighs. Iris yellowish white in all stages, not brown as in *B. platypterus.* Cere yellow. Feet orange yellow. Bill dark slaty.

MEASUREMENTS.

			Wing mm.	Tail mm.	Tarsus mm.
B. antillarum *Type*	♂	St. Vincent	248	154	55
“	♂	“	244	154	54
“	♂	“	240	152	53
“	♀	“	272	165	55
“	♀	“	256	163	53
“	♀	“	254	151	55
“	♀	“	253	154	54
“	♂*	Dominica	258	154	62
“	♂	“	252	159	59
“	♂	“	244	156	59
“	♀	“	251	156	60
“	♀	“	252	165	60
B. platypterus	♂	Panama (winter)	278	171	60
“	♂	“	270	158	61
“	♂	“	264	160	63
“	♀	“	275	170	61

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* The sex as marked on the specimens from Dominica appears to be questionable in some instances.

A comparison between the specimens from St. Vincent and others from the island of Dominica, kindly loaned by Dr. Louis B. Bishop, shows that the Dominica bird is darker and more sooty above, more heavily marked on the breast, and deeper buff on the underparts, suggesting the presence of a good local race on that island. All the birds were obtained in October and September. The iris of the Dominica birds is given as white (A. H. Verrill, collector).

I have examined a specimen from Cuba (in the collection of Messrs. E. A. and O. Bangs) which agrees very well with the St. Vincent examples except in size. It is marked "male," but is the size of the females from St. Vincent. There is a possibility that the bird is wrongly sexed.

While on the island of Carriacou in the Grenadines, I had an opportunity of examining, through the kindness of Dr. Dunbar B. B. Hughes, a number of eggs of this bird, in the collection of the late Mr. John Grant Wells, which were obtained in Grenada. Six sets were represented. The eggs are dull bluish white, unspotted. The natives at St. Vincent also informed me that this bird laid unspotted eggs.

Distribution. Grenada, Bequia (Grenadines), St. Vincent, St. Lucia, Dominica, and probably other of the lesser Antilles; Cuba. ? Porto Rico

Urubitinga anthracina cancrivora subsp. nov.

WEST INDIAN BLACK HAWK. CRABIER.

Type. From Barrouallie, St. Vincent, Jan. 22, 1904. No. 12,804, female adult, coll. E. A. and O. Bangs.

Characters. Bill longer and relatively narrower, with more produced tip than in true *U. anthracina* from the mainland; feathers of hind neck and back spotted with buff and white (in *U. a. anthracina* the hind neck is spotted with whitish, but there is very little if any on the back); general color deeper black than in the mainland form.

This bird inhabits the higher wooded valleys of St. Vincent, keeping near the ground. It is rarely seen far from water.

The type specimen was presented to me by Mr. John F. H. Otway, the Colonial Postmaster of St. Vincent.

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PROCEEDINGS

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NOTES ON BAHAMA BATS.

BY GLOVER M. ALLEN.

This is the second of a series of short papers based on material collected mainly during July, 1904, among the Bahamas. The writer, in company with Mr. Thomas Barbour and Mr. Owen Bryant, spent some ten days on the island of New Providence, and about three weeks among the northern islands of the Bahama group. Everywhere, inquiries were made that might lead to the discovery of bat colonies, but although many caves were visited which we were assured contained bats, only a few of these were found to be inhabited by them. The limestone rock of the Bahamas is quite suitable for cave formation. At several places, notably Hurricane Hole, Great Abaco, and Cedar Harbor, Little Abaco, there were series of rather open caverns in bluffs by the shore. These caverns varied in height from two or three feet to ten feet or more, often with curious cylindrical pits in their roofs. Others, again, were hollows in the ground of a more well-like nature, and sometimes led off at an angle from the opening. But not every cave is suitable as a resting-place for bats. In our experience a prime necessity of a bat cave is that it shall have a chamber sufficiently far from the entrance, or so situated past a turn, as to exclude all daylight. Apparently it is of less importance whether the entrance be in the side of a hill or burrow-like from a level surface. In several cases we were informed that certain caves had been inhabited by bats for a great many years, indicating that they appreciate such places as are suited to their needs. On the island of New Providence, however, we made a journey into the interior to examine some caves on the large estate of Mr. Gladstone, Private Secretary of the Governor. This gentleman assured us that in March these caves were inhabited by numerous bats, and that he had visited them at that time with a party. But when we arrived, some four months later, not a bat could we find after careful search among the narrow passages leading back into the hill. Apparently no bats had been in the cave for some time, and we wondered if possibly it were inhabited at certain seasons only, by species that had migrated thither from elsewhere.

Six species of bats were collected by the members of our party. Although none of these are new, yet it is believed that the notes on their habits and distribution here offered may prove of value.

The bat fauna of the Bahamas is made up of elements somewhat similar in character to those composing the avifauna. Thus, the brown bat (*Vespertilio fuscus bahamensis*) is a representative of a North American species of wide distribution on the continent. The red bat (*Lasiurus borealis seminolus*) is also a representative of a wide-ranging North American species. On the other hand, there are species representing genera whose distribution is mainly the West Indies and the tropical and subtropical portions of the mainland. Such are the house bat (*Nyctinomus bahamensis*), the big-eared bat (*Otopterus waterhousii compressus*), and the straw-colored bat (*Chilonatalus tumidifrons*). A fourth species belonging to this second class is *Glossophaga soricina antillarum*, a skull of which has been recorded by Mr. J. A. G. Rehn from the Bahamas. A third class is represented by *Phyllonycteris planifrons*, which belongs to a genus apparently confined to the West Indies.

I wish to express my thanks to the authorities of the United States National Museum for the loan of specimens for comparison. All the bats collected by our expedition have been presented to the Museum of Comparative Zoology, Cambridge, Mass.

Following is a list of the six species obtained by our party, with notes :

Vespertilio fuscus bahamensis Miller.

Vespertilio fuscus bahamensis Miller. North Amer. Fauna, No. 13, p. 101, figs. 24 *b*, 25 *b*, 26 *b*. Oct. 16, 1897.

On June 29 we discovered a small colony of these bats in one of the underground chambers of old Fort Charlotte, at Nassau, New Providence. This is the type-locality for the subspecies, and we did not meet with it elsewhere. The bats were clustered in a cone-shaped cavity in the ceiling where the limestone rock of the dungeon had become broken away. They were not at all inclined to leave their retreat, but when disturbed simply endeavored to crawl still farther back into the cleft. By placing a net over the opening of this cavity we were able to dislodge a number into it with the aid of a pole. Of the 24 specimens preserved, 8 are adult males and 4 are adult females, 4 are young males and 8 are young females.

Lasiurus borealis seminolus (Rhoads).

Atalapha borealis seminola Rhoads. Proc. Acad. Nat. Sci., Phila., 1895, p. 32.

Lasiurus borealis seminolus Miller. North Amer. Fauna, No. 13, p. 109, Oct. 16, 1897.

? *Lasiurus borealis pfeifferi* (Gundlach) Miller. North Amer. Fauna, No. 13, p. 110, Oct. 16, 1897, Part.

A single female specimen of the Red Bat was captured by Mr. Bryant in the first week of August, at Nassau, where it had flown into a dwelling-house. The specimen was skinned out from alcohol after a two months' immersion and both skin and skull were then carefully compared with specimens of *L. b. seminolus* from Enterprise, Fla. The Bahama specimen is practically indistinguishable in color and proportions from the small, mahogany-red Florida race, and the skulls of the two also agree. When Mr. Miller wrote his Review of the Vespertilionidae of North America, he had but a single skull of the Red Bat from the Bahamas. This skull (from Nassau) he referred doubtfully to the Cuban subspecies, *L. b. pfeifferi*. Our specimen, however, seems referable to the Florida form.

Nyctinomus bahamensis Rehn.

Nyctinomus bahamensis Rehn. Proc. Acad. Nat. Sci., Phila., 1902, p. 641.

This bat was recently described by Mr. J. A. G. Rehn on the basis of specimens from the islands of Eleuthera and Little Abaco. We found a large colony at the latter island and a second at Marsh Harbor, on Great Abaco. In both these cases the bats had established themselves in buildings used as stores and roofed with fluted sheets of galvanized iron. The fluting offered small holes for entrance to the space left between the sheathing and the exterior of the building, and here the little creatures were clustered in most cases quite beyond our reach. One or two individuals, however, I captured in my hands between the rafters and the roofing. Both colonies were visited during the daytime and seemed much awake, as a constant sharp chippering came from their quarter. Their musty odor, characteristic of this family of bats, as well as their continual ill-natured bickering drive the store-keepers to smoke them out at intervals. As many as 500 were said to have been smoked out and beaten down just previous to our visit to the Great Abaco colony. Notwithstanding this destruction, there seemed to be still a considerable remnant. One female specimen taken July 7, at Marsh Harbor, contained a large foetus nearly ready for birth. The bat colony at Little Abaco inhabited the space between the sheathing and the roofing at the store of Mr. Roberts. On the evening of July 10, shortly after sunset, I stationed myself outside the building to observe the animals as they came forth for their nightly foray. The squeaking and scrambling underneath the roof had now become much louder than before. As nightfall approached, the commotion grew more intense, and presently one or two bats swooped out from beneath the roofing and flew swiftly away into the dusk. Singly, or two and three at a time, from all sides of the building they now came forth and dispersed in different directions. Shortly after, a slight shower came on and with it a breeze, but although I watched until it was quite dark, a large number of the bats were evidently staying in their shelter, as evidenced by their squeaks and scratching. Mr. Roberts told me that he had sometimes observed them streaming back to their roost at a little before sunrise in the morning, and further, that on windy or rainy nights but few seemed to leave the shelter of the building.

In the series of 6 skins preserved there is a slight variation in color that appears to be correlated with sex, for the females are a uniform Prouts' brown, while the males are nearly a Broccoli brown.

Chilonatalus tumidifrons Miller.

Chilonatalus tumidifrons Miller. Proc. Biol. Soc., Washington, vol. 16, p. 119, Sept. 30, 1903.

Mr. Miller has recently made known this delicately-formed species from four specimens collected July 12, 1903, at Watling's Island by the Bahama Expedition of the Geographical Society of Baltimore. It is with pleasure, therefore, that we are able to report it from a second locality, Great Abaco, thus extending the known range some 200 miles northwest, to the northern islands of the group. Our colony inhabited a cave at Israel's Point, on the northeastern shore of the island. The entrance to this cave was through a narrow sloping passage, leading down with a slight turn to a small underground chamber some eight feet high, and quite dark. Here, on July 7, I estimated that about 300 bats were hanging from the rough limestone of the sides and roof of the cave. As my guide and I entered with our lantern, those nearest at hand began to flit back and forth keeping up a faint twittering, and finally alighted again in the more distant parts of the cavern. A few retreated through a small crevice which doubtless led into a second chamber. I noticed repeatedly that as the bats alighted they at first clung to the rock with both hind feet, but after obtaining a secure hold, they let go one foot, and hung suspended by one slender limb only. Of the 56 specimens captured, all were males, a fact which indicates that, as with many species of bats, the sexes segregate when not breeding, and that this was a male colony. After the bats had quieted down, I made as careful an examination as possible, and was unable to discover any other species in the cave save for two male specimens of *Phyllonycteris planifrons.* Some two weeks later while returning from our cruise among the northern cays, we again stopped in at Israel's Point and I made a second visit to the cave. To my surprise not one of the little *Chilonatalus* could be found, but instead a colony of from one to two hundred *Phyllonycteris planifrons* was in undisputed possession. The meaning of this I was unable to learn. According to my guide this cave had been discovered some twenty years or more ago when the ground had been in use as a pineapple plantation. It had always been used by the bats so far as he knew and was visited periodically by the planters in order to procure the guano as well as the cave earth that washes in.

Our specimens agree precisely with the original description as given by Mr. Miller. Two types of coloration were noticeable, however, due perhaps to age, for a number of the specimens, though adult, had not acquired the bright yellowish tint but were nearly drab above with the hairs lighter at their bases.

Otopterus waterhousii compressus (Rehn).

Macrotus waterhousii compressus Rehn. Proc. Acad. Nat. Sci., Phila., 1904, p. 434.

The Bahama Otopterus has been recorded from Andros, Long Island, New Providence, and Eleuthera. It has not yet been taken, apparently, among the northern islands of the group. We found but a single colony. This was at Nassau, New Providence, and must have numbered some seventy-five or more individuals. They occupied a portion of the ceiling in one of the underground dungeons cut in the limestone rock at Fort Charlotte. All the adults captured were females, and with these were a number of nearly full grown young of both sexes. In striking contrast to the sleepy brown bats in another chamber of the fort, these bats were alert and active. By the light of a broken lamp we could make out the colony hanging from the ceiling, some of them at least, holding on by one foot only. After once being startled they became very wild and dispersed throughout the chambers of the dungeon, flying from room to room, or back and forth between two chambers as we continued our exploration. Gosse, in writing of the Jamaican Otopterus, calls attention to its subterranean propensities, and says that when living in houses, these bats invariably take up their abode in the cellar. We were interested to observe that none of these bats at the fort appeared to fly out into the light of day, but a number, on the contrary, retreated still farther underground after we had disturbed them. For when we had finished our examination our guide lowered his bucket into a well cut 103 feet deep in one of the underground chambers, and in so doing disturbed a number of the bats which had taken refuge at some depth in the shaft of the well. They emerged singly from the narrow mouth of the shaft as the bucket progressed downward. Several of these bats which we had taken alive were carried to our hotel. At frequent intervals they uttered a short sharp trill, very similar to the sound produced by rapidly running up a squeaky curtain-roller.

The young bats were much darker than the adults, almost a clove-brown on the back, and their faces were almost without hair.

Specimens.—7 adult females and 1 young male (skins); 2 adult females, 6 young males, and 2 young females (alcoholic).

Phyllonycteris planifrons Miller.

Phyllonycteris planifrons Miller. Proc. Biol. Soc., Washington, vol. 13, p. 34, May 29, 1899.

This is a common species in the Bahamas. It was described five years ago by Mr. Miller on the strength of 124 specimens all from the same limestone cave a few miles from Nassau, New Providence. In addition to the colony at Israel's Point, Great Abaco, mentioned in connection with the colony of *Chilonatalus* we also visited a much larger one at Hurricane Hole, on the northeastern coast of Great Abaco. Here is a series of large open caves in a limestone bluff some 50 feet high or more. A small passage leads from the far end of one of these caves, and by means of this access is gained to a high vaulted chamber. A second and smaller chamber leads off from the first after turning a right angle. No ray of light penetrates these inner caverns. Everywhere our lantern disclosed hundreds of the *Phyllonycteris* clinging singly or in clusters to the walls and ceiling of the cave, and they were apparently the only species inhabiting it. I captured and examined a number of the bats. There were adults of both sexes in the cave, and many of the females had each a single young one still suckling, though about losing the last of the milk teeth. These young bats were very dark clove brown above becoming light drab below. A number of specimens were taken which showed various transitional stages of pelage from that of the young to a more mature stage having a curious patchy mixture of clove brown and vinaceous cinnamon above and drab beneath.

The colony at Marsh Harbor, visited July 20, also consisted of both sexes, but of the 18 specimens taken, only 2 were females. All the bats in this colony seemed to be adults.

As with some other species mentioned, many of these bats when at rest clung by one foot only. They are of a quarrelsome disposition and bite vigorously when handled. Their bickerings were audible even before we reached the mouth of their cave and it is evident that the colony, though resting, is much awake even in the daylight hours. A number of them were found to have one or both ears truncated near the tip in so regular a fashion as to make it seem that there were two types of ear-outline among them. The occurrence of some individuals with only one clipped ear, however, might indicate that this shape is due to accidental loss of the point of that organ through its having been bitten off by one of the quarrelsome company.

Specimens.—12 adult and 2 young males (skins); 3 adult females (skins); 4 adult females and 7 males (alcoholic), 2 young females and 2 young males (alcoholic).

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PROCEEDINGS
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GENERAL NOTES.

A SNAKE NEW TO THE DISTRICT OF COLUMBIA.

[By Permission of the Secretary of the Smithsonian Institution.]

In his "List of the Batrachians and Reptiles of the District of Columbia and Vicinity" (Proc. Biol. Soc. Washington, XV, 1902, pp. 121–145) Prof. W. P. Hay enumerated 21 species of snakes as of more or less certain occurrence in the District. I am now able to add a species, viz: *Cemophora coccinea* (Blumenbach).

A specimen of the "Scarlet Snake" was presented recently to the National Museum by Dr. I. W. Blackburn, of the Government Hospital for the Insane, who kindly writes me regarding its origin as follows:

"The specimen of *Cemophora coccinea* came into my possession alive, about the summer of 1893. It was captured by an employee of St. Elizabeth Hospital, in the vicinity of Anacostia."

It is now No. 35,308, U. S. National Museum.

Compared with the other snakes in the District of Columbia, as defined in Prof. Hay's List, it belongs to the non-venomous section with smooth scales; anal plate not divided; underside of body is uniformly white, thus differing from the three species of *Lampropeltis* with which it otherwise agrees most. An important structural character is the prominent and somewhat conical rostral which even caused Schlegel to place it in the genus *Heterodon*.

This record extends the known range of the species considerably. It has been known from Louisiana to Florida and north to South Carolina, and has been regarded as a southern snake characteristic of the Austroriparian region. Early in May, 1891, a live specimen was sent to the museum from St. Margarets, Anne Arundel Co., Maryland, by Mr. A. A. Stinchcomb, but unfortunately it escaped. A drawing and color description made from the living animal show that the determination was correct. These are the two most northern records. As the colors of the living snake are of interest a description of the last-mentioned specimen follows:

Iris chestnut; tongue anteriorly pale flesh color deepening backward to coral red; top of head in front of the postfrontal black cross-band, as well as dorsal blotches, dull vermilion; occipital band, occupying posterior half of parietals, temporals, and anterior row of dorsal scales, orange (being of a light yellow ground-color clouded with vermilion); rostral and loreal region more pinkish; labials white; light dorsal interspaces primrose yellow, color deepest on median line and fading gradually into white on the first scale row; borders of vermilion patches jet black; lateral dusky spots dark brown (being black overlaid with vermilion); whole underside white with mother-of-pearl reflections.—*Leonhard Stejneger.*

WHY NOT *PARAMAYA?*

In a former paper* I referred to the substitution by Stebbing of *Mamaia* 1904† for *Maja* Lamarck 1801,‡ the latter genus being rightfully abandoned. There is, however, an earlier name than *Mamaia, Paramaya* de Haan, which has claims to validity. *Paramaya* first appeared in 1837 on plate XXIV of De Haan's Fauna Japonica, Crustacea, as a subgeneric designation, the type species being called "Pisa (Paramaya) *spinigera n.*" This plate and plates E and F were issued with Decas III, pages 65 to 72, according to Bulletin des Sciences Physiques et Naturelles en Néerlande, Leyde, 1838, where the notice appears in the number for August 31, in a list of books published since January 1, 1838. That the date given (1838) is not early enough is evidenced by the fact that the "Ophidii" of the Fauna Japonica which was published at the same time, is noticed in Gelehrte Anzeigen, München, July 7, 1837. The text of "Decas Tertia" is also dated 1837 at the foot of page 65.

The type species of *Paramaya* is congeneric with the type species of *Mamaia, M. squinado* (Herbst), 1788.

The name *Paramaya* remained undisputed until 1839, when de Haan published his "Decas Quarta," including pages 73 to 108. On page 93, appears the caption "Maja (Maja) spinigera, n. sp.," followed by "T. XXIV. f. 4. ♀ (Paramaya) et T. G.," thus rejecting his *Paramaya* for *Maja.* Again in the last issue of his work, in 1849, de Haan publishes under "Errata in tabulis specierum," the following, "Tab. XXIV. fig. 4: Maja (Paramaya) spinigera, n.; *lege:* M. (Maja) spinig."

The right of an author to the privilege of *errata* published simultaneously with the error is conceded; but he can not cancel names at a later date, even in a continuation of the same work, without violating Canon XXXV of the A. O. U. Code, which says, "An author has no right to change or reject names of his own proposing, except in accordance with rules of nomenclature governing all naturalists, he having only the same right as other naturalists over the names he has himself proposed." *Paramaya,* therefore, was not obliterated by de Haan, but remained a synonym of *Maja* until to-day, when it must needs take the place of the older name.—*Mary J. Rathbun.*

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* Proc. Biol. Soc. Washington, XVII, p. 171, 1904.

† Spolia Zeylanica, II, pt. V, p. 2, April, 1904.

‡ Syst. Anim. sans Vert., 154, 1801.

THE GENERIC NAME OF THE WILLET.

For many years—since 1858 at least—the Willet has remained in undisputed possession of the generic name *Symphemia*, proposed by Rafinesque in 1819 (Journal de Physique, LXXXVIII, p. 418), but overlooked by ornithologists until 1845, when it was noticed by Hartlaub (Revue Zoologique, 1845, p. 342). This author, in some notes on genera omitted by Gray in his "List of Genera of Birds," mentioned Rafinesque's paper, citing the three genera of birds there diagnosed, *Rimamphus*, *Helmitheros*, and *Symphemia* (all on page 418), giving, however, merely a reference to the first page (p. 417) of Rafinesque's article. Of the last he wrote: "*Symphemia*, Genre établi par Rafinesque, l.c., pour le *Scolopax semipalmata*, Gmel. espèce bien connue et type du genre *Catoptrophorus* de Bonaparte (1828). M. Rafinesque a nommé cet oiseau *S. atlantica*." Relying on Hartlaub's usual accuracy, subsequent authors accepted this statement (and erroneous page reference) without question, and *Symphemia* has since figured as the proper generic name for the Willet. Turning now to Rafinesque's paper we find the following brief account of *Symphemia*: "Symphemia. Différent du genre *Tringa* par bec cylindrique, doigts semi-palmés. Type *T. semipalmata* que je nomme *S. atlantica*. Il y en a une autre espèce en Kentucky qui peut se nommer *S. melanura*." That this diagnosis is not intended for the Willet is at once evident. The Willet, a long-legged bird, originally placed in the Linnæan genus *Scolopax*, has never been referred to *Tringa*, and its bill is by no means cylindrical. What Rafinesque actually did was to erect the genus *Symphemia* for *Tringa semipalmata* Wilson, our present *Ereunetes pusillus* (Linnæus), and as a natural sequence *Symphemia* must be reduced to a synonym of *Ereunetes* Illiger, 1811. Hence another name will be required for the Willet; and the earliest generic term for this bird appears to be *Catoptrophorus* Bonaparte (Ann. Lyc. Nat. Hist. New York, II, Nov., 1827, p. 323), first introduced as a subgenus of *Totanus*, in these words: "following the mania of the day, we have formed a new subgenus for the reception of this bird, which deserves the distinction quite as well, and better than a great many others."

It is unfortunate that Billberg's short term *Nea* was not published until 1828 (Synopsis Faunae Scandinaviae, II, 1828, p. 155). Two species were included in this genus, viz: *Scolopax glottis* Linn., and *S. semipalmata* Gmelin. The former is the type of *Glottis* Koch, 1816, leaving the latter as type of *Nea*.—*Chas. W. Richmond.*

NOTE ON THE SYNONYMY OF *HÆMATOSPIZA SIPAHI.*

In a recent note on this species (Novitates Zoologicae, XI, p. 456), Mr. Hartert accepts as its proper name *Hæmatospiza indica* (Gmelin), based on Seba (I, pl. 60, fig. 4), and cites two synonyms not mentioned in the British Museum "Catalogue of Birds," viz.: *Loxia indica* Gmelin (1788), and *L. boetonensis* Latham (1790). To these may be added three others, all based on Seba, or on Brisson (ex Seba):

Loxia cristata J. R. Forster, Indische Zoologie, 1781, p. 41.

Loxia butanensis J. R. Forster, Faunula Indica, 1795, p. 8.

Loxia rubra Suckow, Anfangsgr. Naturgesch. Thiere, II, 2, 1801, p. 832. *Loxia cristata* Forster, 1781, being the oldest name for the species (assuming Seba's plate to be recognizable), Mr. Hartert would probably adopt it, but as it is twice preoccupied (Linnæus 1758, Müller 1776), the correct name; according to the American Ornithologists' Union "Code," would be *Hæmaospiza indica* (Gmelin).—*Chas. W. Richmond.*

NEW GENERIC NAME FOR THE GIANT FULMAR.

The generic name *Ossifraga*, given by Hombron and Jacquinot (Comptes Rendus, XVIII, 1844, p. 356) to *Procellaria gigantea* Gmelin, is antedated by *Ossifraga* N. Wood (Analyst, II, 1835, p. 305; VI, 1837, p. 244), applied to a very different group of birds. As the Giant Fulmar is thus bereft of its generic name, that of **Macronectes** may be suggested as an equivalent.
—*Chas. W. Richmond.*

NOTE ON A SPECIMEN OF *PITHECOPHAGA JEFFERYI* OGILVIE-GRANT.

The United States National Museum has recently received from Mr. Fletcher L. Keller, a hemp-planter of Davao, Mindanao, and an energetic member of the Philippine Scientific Association, a fine skin of the Philippine Monkey-eating Forest-Eagle, which Mr. W. R. Ogilvie-Grant made known as *Pithecophaga jefferyi*, a new genus and species, described in the Bulletin of the British Ornithologists' Club, Vol. VI, No. XL, p. XVII, 1896, and subsequently figured and described in greater detail in the *Ibis* for 1897 (pp. 214–220, pl. V, and text figures 1–4). He speaks of it as "perhaps the most remarkable bird which has been discovered in the Philippines." Mr. Ogilvie-Grant's specimen came from the island of Samar. He remarks: "The discovery of this mighty bird of prey is without doubt the most remarkable of Mr. Whitehead's achievements in the Philippine Islands. That so large a Raptor should have remained unknown till the present time only shows how easily these great Forest-Eagles may be overlooked." Respecting the size of this specimen, which was a male, Mr. Ogilvie-Grant states: "Mr. Whitehead says that it weighed between 16 and 20 lbs." The bill of this species is characterized by extreme narrowness and very great depth; and the high vaulted narial opening is also a peculiar character. The naked tarsi and feet resemble those of the Harpy Eagle although considerably weaker. The wings are short and the tail very long, which is just the reverse of the common Eagle of the Islands (*Pontoaëtus leucogaster*). Mr. Ogilvie-Grant says: "Strange as it may seem, we have little doubt that the Harpy is the nearest known ally of the present species." In Sharpe's "Hand-List of the Genera and Species of Birds" (Vol. I, page 265), this bird is given a position between the Short-toed Eagles (*Circaëtus*) and the Serpent-Eagles (*Spilornis*).

Pithecophaga jefferyi is still among the rarest birds in museum collections. Mr. Keller's is the second specimen to reach America, and makes the first authentic record for the island of Mindanao. I saw one in the Menage collection, at the Public Library, in Minneapolis, and one in Manila, and know of but five preserved specimens. Mr. Keller's is a male (No. 192,382, U. S. National Museum), taken near Davao, Mindanao, P. I., September 3, 1904. It closely resembles the type; but broader shaft-stripes to the feathers give the head a darker color than that of the male described and figured by Mr. Ogilvie-Grant (*Ibis* for 1897, plate V). From the skin I took the following measurements: Length, 980 mm.; wing, 600; tail, 465; chord of culmen, 65; chord of culmen and cere, taken together, 78; cere, 21; depth of bill, 51; depth of culmen, 41; greatest width of culmen, 21; tarsus, length, 22; tarsus, circumference, 60; inner claw (chord), 49; middle claw, 39; outer claw, 30; hind claw, 52; hind toe, without claw, 51; width of middle tail-feather, 98; length of longest occipital feather, 90.—*Edgar A. Mearns.*

A NEW NAME FOR THE *PEROMYSCUS NEBRACENSIS* OF CERTAIN AUTHORS.

The name *Hesperomys sonoriensis* var. *nebracensis* was used first by Baird, who mentioned it without description in text under his *Hesperomys leucopus* (Mamm. N. Am., p. 462, 1857). It appears next in 1877, when Coues quotes the name in synonymy under *Hesperomys leucopus sonoriensis.* It remained a nomen nudum until 1890, when Mearns used it in connection with a full description and designated a specimen which he called his "type of diagnosis," No. 1200 Am. Mus. Nat. Hist., N. Y., from Calf Creek, Montana (See Bull. Am. Mus. Nat. Hist. II, pp. 285–287, Feb. 21, 1890). The name *nebracensis* will therefore date from Mearns, not from Baird, and the type of Mearns' diagnosis will be the type in fact. Authors subsequent to Mearns have frequently used the name *nebracensis* for a very small and bright colored mouse found in Western Nebraska and adjacent regions. It is a well known form, specimens of which are contained in most of our large museums, and doubtless is the form that Baird intended to name. It is however very different from the *nebracensis* of Mearns, which is much larger and darker and more closely related to the form later called *subarcticus* by Allen. The small bright colored form therefore needs a new name and may be called **Peromyscus luteus**. The type is No. $\frac{18658}{25447}$ Biological Survey Coll., U. S. National Museum, collected April 23, 1890, at Kennedy, Nebraska, by Vernon Bailey. Measurements of type: Total length, 152; tail vertebræ, 62; hind foot, 20. Color: Upperparts bright ochraceous buff very lightly mixed with dusky; subauricular spots pure white, large, and conspicuous; underparts pure white.—*Wilfred H. Osgood.*

VOL. XVIII, PP. 79-82 FEBRUARY 21, 1905

PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

DESCRIPTIONS OF THREE APPARENTLY NEW SPECIES OF MAMMALS.

BY D. G. ELLIOT, F. R. S. E., ETC.

Canis pambasileus* sp. nov.

AUTOCRAT TIMBER WOLF.

Type from Sushitna River, region of Mount McKinley, Alaska. No. 13,481, Field Columbian Mus., Chicago.

General characters.—Color from nearly uniform black to white and black in various mixtures. Skull: Size larger than those of timber wolves of Canada or United States; ridge of sagittal and occipital crest nearly on a level with frontal and with only a very slight descent at occiput and very deep at that point; maxillae very broad and rounded posteriorly at junction with the frontals, much broader than in *C. occidentalis;* nasals pointed posteriorly but considerably broader than those of southern timber wolves; premaxillae extending considerably over one-half the length of the nasals, while in *C. occidentalis* in some cases this bone does not reach over one third the length of the nasals and occasionally not even that length; intertemporal width considerable, with a deep median depression between the frontals; the basisphenoid is very broad, and the postglenoid processes very wide and flattened; the mandible is massive, heavy, very deep, and of nearly uniform height on horizontal portion, with the inferior outline nearly straight, very different from the curving outline of the mandible of *C. occidentalis;* the coronoid process is very broad, high, of nearly equal width throughout, and with the posterior outline nearly straight, not curving like that of the southern species; teeth in both jaws large and heavy, exceeding in size those of *C. occidentalis* in the same proportion as do the skulls.

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* **παμβᾶσῐλεύς**—an absolute monarch.

Color.—Type: General hue of body, tail, legs and feet black; the bases of the long hairs a smoky white, showing rather conspicuously on the sides; a pure white spot on the breast, and lower part of the abdomen, and large spots on the fore part of chest behind fore legs grayish white; head and ears shining black; tail black, with few white hairs at tip; claws black.

Other specimens are all black with very few grayish white hairs showing. From this sable hue, which in certain sections seems to be the prevailing one, the color varies in different mixtures of black and white to that in which the white is the prominent color with jet black lines on dorsal surface and neck. The tail of this style is mostly white with black mixed in in places and with the tip black.

Measurements.—Skull: Total length, 263; Hensel, 233; zygomatic width, 143; intertemporal width, 64; lateral length of nasals, 97; median length, 85; width of rostrum at canines, 55.5; palatal length, 126; width of palate between sectorials at base, 64; length of upper tooth row, anterior edge of canine to posterior edge of last molar, 114; length of canine, 36; alveolar length of carnassials, 27; width of row of incisors at tips, 42; total length of mandible, 206; depth beneath carnassial, 32; height of coronoid process from lower edge of angle, 78; width of coronoid process at tip, 29.

In a collection from the upper waters of the Sushitna River in the region of Mount McKinley were the skins and skulls of several wolves, remarkable for their large size and black color. While larger than any that I had previously seen from Alaska, the size would not alone have been deemed of consequence had it not been accompanied by the characters that are apparently not to be found in the timber wolves of the countries to the south, and which make these animals worthy of being considered as belonging to a distinct form. The skulls when compared with those of *C. occidentalis* exhibit conspicuously the differences given in the description above, and the peculiar coloration of the various individuals may not easily be found among those of the allied species.

Lutra periclyzomae[*] sp. nov.

SEA-GIRT OR ISLAND OTTER.

Type from Gawi, west coast of Moresby Id., Queen Charlotte Islands, British Columbia, Canada. No. 491, Field Columbian Mus., Chicago.

General characters.—Skull: Size large; intertemporal region long and narrow, greatly constricted for its entire length; in young animals this constriction is not so apparent. Rostrum short and very broad; postorbital processes greatly elongated; braincase without crests, rounded, and widest posteriorly; bullae small and flat, barely rising above the level of the basioccipital; pterygoid fossa broad for its entire length, the sides nearly straight but widening gradually to tips of pterygoid processes where the width is greatest; upper molars very large, the cusps on exterior side very high and acute; last molar square-shaped, slightly widest on interior edge.

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[*] *περικλύζομαι*—to be sea-girt.

Measurements.—Skull: Total length, 122; Hensel, 107; zygomatic width, 81; intertemporal constriction, 20; width across postorbital processes, 40; width of rostrum at canines, 30.5; palatal length, 55; length of upper tooth row, anterior edge of canine to posterior edge of last molar, 40; length of nasals, 17.5; total length of mandible, angle to tips of incisors, 76; length of lower tooth row, anterior edge of canine to posterior edge of last molar, alveolar border, 46; length of canine, 13; length of lower carnassial, 15.

In a small collection of skulls presented to the Museum by Dr. C. F. Newcombe from the Queen Charlotte Islands were three of otters. Comparing these with skulls of *L. c. pacifica*, rather striking differences are at once perceived, such as the unusually lengthened constriction of the intertemporal region, the smallness and flatness of the bullae; the heavy wide rostrum and muzzle, and the large long-cusped molars. The postorbital processes in the type project outward and backward like horns and the various distinctive characters and comparative differences exhibited between the skull of this island animal and that of the mainland species indicate that they may not properly be considered as one and the same. It is evidently a large and powerful animal, possibly exceeding in size its near relative. The other skulls from Queen Charlotte Island were those of *Ursus carlottae* Osgood and *Mustela nesophila* Osgood.

Gulo hylaeus[*] sp. nov.

MOUNT McKINLEY WOLVERINE.

Type from upper waters of Sushitna River, region of Mount McKinley, Alaska. No. 9883, Field Columbian Mus., Chicago.

General characters.—Type: General color very dark; no buff hue on body, or gray on head anywhere visible. Skull compared with that of specimens from New Brunswick, Canada, is narrower, especially at intertemporal region, also postorbital constriction and posterior region of braincase; and the zygomatic width is less; but the audital bullae are nearly twice as large, and swollen greatly on their inner margin, whereas those of the Canadian animal are much flattened and small in size.

Color.—Head, throat, sides of neck and body, and base of tail chestnut; hind part of neck, back, underparts, legs, and feet black; chest spotted or blotched with white or orange, and orange spot on anal region; nose darker chestnut than head; tail, except at base, black.

Measurements.—Skull: Total length, 157; Hensel, 133; zygomatic width, 104; intertemporal width, 47; postorbital constriction, 32; palatal length, 75; greatest width of braincase, 67.5; mastoid width, 89; post-palatal length, 57; length of nasals, 21; length of upper premolar and molar series, 41;

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[*] υλαιος—living in forests.

length of mandible, 101; height of coronoid process above angle, 35; length of lower premolar and molar series, 54; length of lower carnassial alveolar border, 21.

Six specimens before me from the Sushitna River and four specimens of *G. luscus* from Canada exhibit the differences between the species as expressed in the above description. The type and two of the others, old individuals, are darker on the sides of the body than are the other three and this part in these specimens is a buffy chestnut; but all have the dark heads which make them externally conspicuously different from the eastern animal with its gray head and black muzzle, and cause the new form to be recognizable at a glance. The large bullae of the Alaskan animal will also readily distinguish the skulls.

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PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

DESCRIPTIONS OF EIGHT NEW PHILIPPINE BIRDS, WITH NOTES ON OTHER SPECIES NEW TO THE ISLANDS.

BY EDGAR A. MEARNS.
(Major and Surgeon, U. S. Army.)

It is my intention to prepare, at an early date, a more extended paper on the collection of 1,000 or more specimens of birds collected in the military department of Mindanao, Philippine Islands, by myself and other members of the Philippine Scientific Association, during the years 1903 and 1904. At present I am obliged to restrict myself to describing eight new species and adding records of other species new to these islands. In identifying the specimens thus far collected, comprising 216 species, I have received very great assistance from Dr. Charles W. Richmond of the Smithsonian Institution, and have also been helped by Mr. Harry C. Oberholser, Mr. William Palmer, Mr. J. H. Riley, and Dr. Leonhard Stejneger, to each of whom I express my sincere thanks.

Turnix suluensis sp. nov.

SULU BUSTARD-QUAIL or HEMIPODE.

Type No. 191,433, U. S. National Museum. Adult female from Jolo, island of Sulu, P. I., November 25, 1903. Collected by Edgar A. Mearns (original number, 13,141).

Of the five species of *Turnix* known from the Philippine Islands this one is most closely related to *Turnix whiteheadi*, of Luzon, from which it may be distinguished by its larger size, and the general brown coloration of the upperparts, which are blackish in *T. whiteheadi*, as well as by the absence of a well defined cervical collar.

Adult female (type and only specimen).—General color of upperparts walnut brown, the feathers finely banded and vermiculated with gray and black; top of head clove brown, the feathers almost imperceptibly edged with gray, divided by a median stripe of isabella color extending from the base of the bill to the occiput; sides of head and neck buffy white speckled with clove brown; nape walnut brown, the feathers edged with gray; mantle walnut brown, the feathers edged with gray, and vermiculated with black, gray, and traces of very pale cinnamon; lower back, rump, and upper tail-coverts clove brown, the feathers narrowly edged with gray on the back and upper rump, more broadly with cinnamon on the lower rump and upper tail-coverts; tail grayish drab, the feathers perceptibly cross-banded with wavy lines of dusky, edged with cinnamon on outer webs, with middle pair of feathers extending seven millimeters beyond the next pair; scapulars and humerals conspicuously edged externally with golden buff and cinnamon; primaries grayish drab, the two outer ones edged externally with wood brown; secondaries darker drab, edged with cinnamon on the outer web; greater wing-coverts cinnamon, drab at base, with a subterminal black spot on the outer web; lesser wing-coverts cinnamon-rufous, edged with buff, with a subterminal black ocellus; chin, upper throat, and malar region, whitish, the last speckled with blackish brown; lower neck and upper breast clay color, bordered by a chain of oval black spots, the largest three millimeters in length; lower breast and middle of belly whitish; sides of lower neck, and sides of chest and breast, chestnut mixed with black and clay color; flanks light clay color; under tail-coverts darker clay color; lining of wings pale clay color and pale grayish drab. Length of skin, 120; wing, 68; tail, 31; culmen, 11.5; depth of bill at angle of gonys, 3.8; tarsus, 19.5.

Muscadivora* **langhornei** sp. nov.

LANGHORNE'S FRUIT-PIGEON.

Type No. 191,877, U. S. National Museum, from West Bolod Island (off Basilan), P. I., February 21, 1904. Adult male. Collected by Edgar A. Mearns. (Original number, 13,358.)

This large Fruit-Pigeon is closely related to *Muscadivora pickeringi* (Cassin) from Mangsee Island, north of Borneo, on the west side of the Sulu Sea, of which the type (No. 15,732) is in the U. S. National Museum. The size is practically the same; but the color differs as follows: General coloration paler. The vinous gray of the head and underparts is darker, the gray of

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*Dr. Richmond's MS. card catalogue of avian genera shows *Carpophaga* Selby (1835) to be preoccupied by *Carpophaga* Billberg (1828) for a genus of Cuckoos. Schlegel, in "1864" (1872?), proposed *Muscadivora* as a substitute name for *Carpophaga*. The type, therefore, remains *Columba ænea* Linnæus.

lower hind neck extends farther down on the mantle, the white around the base of the bill and surrounding the eye is more extensive, the back and rump are paler and less brownish gray, the wings are paler, grayer and less greenish, and the under tail-coverts less reddish.

Colors of soft parts.—Iris purplish red; region of the nostrils dark plumbeous; bill light plumbeous; naked eyelid deep vinaceous; bare space around eye plumbeous; feet vinaceous, flesh color on under side of toes; claws plumbeous.

Measurements of three adult males from West Bolod Island (topotypes).—Length, 456, 456, 460; alar expanse, 770, 760, 770; wing, 242, 242, 243; tail, 180, 180, 178; culmen, 19, 21, 19; tarsus, 30, 31, 32; middle toe and claw, 48, 49, 45.

Geographic range.—East Bolod and West Bolod islands, off Basilan Island, P. I.

Caprimulgus affinis mindanensis subsp. nov.

MINDANAO NIGHTJAR.

Type No. 190,596, U. S. National Museum. Adult male from Malabang, southern Mindanao, P. I., October 18, 1903. Collected by Edgar A. Mearns. (Original number, 13,071.)

The Nightjar of Java (*Caprimulgus affinis* Horsfield) is a wide-ranging island species, subject to considerable variation in the different islands which it inhabits. The present form and *C. griseatus* G. R. Gray are the most divergent from the typical form, and their status as species, or as subspecies, will depend upon the point of view of different authors respecting divergent island forms. I am disposed to regard them as races of a common species.

Adult male.—Similar to *Caprimulgus affinis affinis*, but differing as follows: General coloration darker. Upperparts hair brown, finely vermiculated and dotted with clove brown, light gray, and black; scapulars marked with broken spots of cinnamon; first four primaries banded across their middle with pure white except the outer web of the first primary, this band varying from 12 to 24 millimeters in width on the different feathers, widest on the fourth; outer tail-feather white only on the terminal half, the basal half being cinnamon, clouded and irregularly cross-banded with brownish black, and the tips of both webs clouded with brownish black; second feather similar, but with much less of the dusky clouding at tip; lower abdomen and thigh-coverts cross-banded with pale sepia brown; under tail-coverts and anal region buff, without cross-bands; upper third of tarsus feathered. Total length of skin, 205; wing, 163; tail, 100; culmen, 8; tarsus, 19.

Individuals vary greatly in the character and size of the punctate and vermiculate markings of the upper surface. The vague black cross-bands of the middle pair of tail-feathers are somewhat V-shaped (open apically), numbering about eight.

In true *affinis*, adult males have the outer tail-feather all white, and the lower abdomen, thigh-coverts, and under tail-coverts "uniform pale fulvous buff." In *C. affinis griseatus* the bars are spread over the whole of the lower abdomen, thighs, and lower tail-coverts, and the color is more grayish rufescent than in *C. affinis mindanensis*, which appears to be closest to the form of *C. affinis* inhabiting the Celebes.

Phyllergates heterolæmus sp. nov.

MOUNT APO TAILORBIRD-WARBLER.

Type.—No. 192,258, U. S. National Museum, from Mount Apo, at 6,700 feet altitude, Mindanao, P. I., June 21, 1904. Sex not determined. Collected by Edgar A. Mearns. (Original number, 13,550.)

Description of adult (*type*).—Whole top and sides of head cinnamon-rufous; chin, throat, and sides of neck cinnamon; upperparts olive-green, yellower on upper tail-coverts; upper wing-coverts and wing-quills brownish black, edged with olive-green on outer webs; tail-feathers drab, edged with olive-green; breast and belly canary yellow; thighs and crissum olive-yellow; axillars and under wing-coverts yellow; quills edged with white on inner webs. Iris brown; bill with maxilla brown, mandible yellow tipped with red; feet pale yellowish brown. Length, 121; alar expanse, 150; wing, 50; tail, 47; culmen, 14; tarsus, 21; middle toe with claw, 13.5.

This bird was shot in bushes, and was the only one of its kind seen.

Cephalophoneus suluensis sp. nov.

SULU LONG-TAILED SHRIKE.

Type No. 191,895, U. S. National Museum. Adult male, from Bual, Sulu Island, P. I., February 21, 1904. Collected by Edgar A. Mearns. (Original number, 13,355.)

In size and color pattern this species closely resembles *Lanius nasutus* Scopoli, from which it may be distinguished by the pale color of the scapulars, back, and rump, as well as by the pinkish vinaceous color of the abdomen.

Adult male (two specimens).—Whole top and sides of neck, and hind neck, black; mantle gray (No. 10, Ridgway), fading to pale cream-buff on back; scapulars pale cream buff, broadly bordered with white; rump and upper tail-coverts pinkish buff; primaries black, with an exposed spot of white formed by white bands crossing the external webs of third to seventh primaries opposite the end of the bastard wing; secondaries black, tipped and edged externally with white; tail black, with outer feathers gray at base, tipped with grayish white; chin, throat, breast, thighs, axillars, and lining of wings pure white; sides buff; abdomen pinkish vinaceous; under tail-coverts buffy white. Length (of skin), 240; wing, 95; tail, 135; culmen, 17; depth of bill at angle of gonys, 8.7; tarsus, 28.

Hyloterpe apoensis sp. nov.

MOUNT APO THICK-HEAD. *Pbe'a-oi'-toi* (Bagobo).

Type No. 192,247, U. S. National Museum, from Mount Apo at 6,000 feet altitude, Mindanao, P. I., June 20, 1904. Adult male. Collected by Edgar A. Mearns. (Original number, 13,538.)

This Thick-head is most closely related to *Hyloterpe philippinensis* Walden, from which it may be distinguished by its greater size (wing 85 in *apoensis* against 79 in *philippinensis*), shorter bill (from nostril 9.5 against 10.5), much deeper yellow underparts (lemon yellow instead of canary yellow), restriction of the pale drab-gray to the chin and upper throat, yellowish instead of whitish wing-lining, and brighter olive-green of the mantle.

Adult male and female (eight specimens).—Sexes alike, except that males are slightly larger than females, and, perhaps, have the top of the head a little grayer. Top of head brownish gray, tinged with olive-yellow on the occiput; sides of head (except ear-coverts), lores, eye-ring, and feathers bordering the maxilla smoky drab; ear-coverts broccoli brown; mantle olive-green; rump and upper tail-coverts yellowish olive-green; flanks olive-green, the feathers tipped with yellow; wing-quills brownish black, most of the feathers edged with olive-green on outer web; tail-feathers dusky olive-green; chin and upper throat pale ashy, with darker shaft-streaks to the feathers; rest of underparts lemon yellow with a perceptible wash of olive-green on chest and sides; edge of wing, axillars, and lining of wings pale yellow. Iris brown; bill black; feet and claws plumbeous in males, fleshy gray in females.

Measurements of adults.—Four adult males: Length (fresh), 170, 179, 170, 170; alar expanse, 280, 289, 267, 262; wing, 85, 92, 84, 85; tail, 75, 78, 72, 72; bill, measured from anterior margin of nostril, 9.5, 9, 10, 9.5; culmen, 13.5, 13.3, 13.3, 14.5; tarsus, 19, 19, 20, 19; middle toe with its claw, 16, 16, 17, 16. Four adult females: length, 170, 171, 170, 166; alar expanse, 269, 266, 263, 265; wing, 85, 84, 84, 83; tail, 72, 70, 70, 69; bill, measured from anterior margin of nostril, 10, 9, 9.5, 9.5; culmen, 13.5, 14.3, 14.5, 15; tarsus, 19, 20, 18, 20; middle toe with claw, 18.5, 17, 15, 17.

First plumage (No. 192,249, U. S. National Museum, from Mount Apo at 6,000 feet altitude, June 25, 1904). Different from adult. Top of head sepia brown; back, rump, scapulars, and upper wing-coverts burnt umber washed with green; upper tail-coverts olive-green; quills dusky grayish brown, the primaries edged externally with olive-green, the secondaries washed with burnt umber; tail olive-green; under tail-coverts brownish yellow; flanks olive-green, the feathers tipped with olive-yellow; chin and upper throat whitish; lower throat, breast, belly, and sides cinnamon-fawn; lining of wings yellow. The note of this young bird, when calling its parent, was like that of a newly-hatched chicken.

Dicæum davao sp. nov.

BLACK-CHESTED FLOWER-PECKER.

Type No. 192,054, U. S. National Museum, from Cottabato, on the Rio Grande of southern Mindanao, P. I., March 3, 1904. Adult male. Collected by Edgar A. Mearns. (Original number, 13,399.)

Adult male (two specimens). Entire upperparts glossy metallic black with green and blue reflections; wing-quills and tail-feathers blue-glossed; sides of head, neck, and chest, dull black; chin and throat yellowish white;

chest crossed by a narrow black band that extends backward in the median line to the abdomen; belly and under tail-coverts pale brownish yellow; sides olive-green shading to black anteriorly; axillars and lining of wings white; inner web of quills edged with white at base; edge of wing black finely dotted with white. Total length of skin, 75; wing, 45; tail, 25; culmen, 9.5; tarsus, 10.5.

Lamprocorax todayensis sp. nov.

MOUNT APO GLOSSY STARLING. *Kohl-lee'-po* (Bagobos of Todaya).

Type No. 192,302, U. S. National Museum, from Todaya, on Mount Apo at 4,000 feet altitude, July 11, 1904. Adult female. Collected by Edgar A. Mearns. (Original number, 13,687.)

This small species of Glossy Starling was abundant in the high forest above the Bagobo village of Todaya, where small flocks flew with great speed above the treetops, only alighting on the highest dry branches, where they were with difficulty reached by shot. *Ahn'-dee*, my Bagobo hunter, shot several of them; but I laid them aside, supposing them to be *Lamprocorax panayensis*, and they were finally thrown away spoiled.

Description of type (female).—Similar to *L. panayensis*, but much smaller, and otherwise differing as follows: The feathers of the nape and lower throat are more rigid and, perhaps, relatively longer. Viewed in certain lights the plumage is less golden green, the gloss being purplish blue; the wings and tail are dull purplish black, without metallic gloss; and the throat is more decidedly glossed with violet-purple. Length of skin, 157; wing, 95; tail, 59; culmen, 13.5; bill from anterior border of nostril, 10; depth of bill at nostrils, 6; tarsus, 19.

The following-named forms, eleven of which have been previously described, have proved to be new to science:

Turnix suluensis.
Muscadivora langhornei.
Caprimulgus affinis mindanensis.
Muscicapula montigena.
Gerygone rhizophoræ.
Leonardina * *woodi.*
Pseudotharrhaleus griseipectus.
Macronous mindanensis montanus.
Brachypteryx mindanensis.
Merula kelleri.

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* The generic name *Leonardia* proposed by me for this genus, on page 1 of this volume, is preoccupied by *Leonardia* TAPPARONE-CANEFRI, Ann. Mus. Civ. Genova, ser. 2, Vol. VII, 1890, p. 332, for a genus of marine slugs, and is here changed to *Leonardina*.

Phyllergates heterolæmus.
Cephalophoneus suluensis.
Hyloterpe apoensis.
Pardaliparus elegans mindanensis.
Dicæum davao.
Æthopyga boltoni.
Cyrtostomus dinagatensis.
Anthreptes cagayenensis.
Lamprocorax todayensis.

The following-named species should be added to the catalogue of Philippine birds, by Worcester and Bourns, published in 1898 *:

Limonites minutus (Leisler).

LITTLE STINT.

I collected an adult male (No. 191,416, U. S. National Museum) of this stint at Zamboanga, Mindanao, P. I., December 17, 1903.

Hydralector gallinaceus (Temminck).

COMB-CRESTED JACANA. *Pah-pan-ook'* (Moros of the Rio Grande Valley).

This is an abundant species of the Rio Grande Valley of southern Mindanao. I collected a female specimen (No. 191,917, U. S. National Museum) on the Buluan River, connecting lakes Buluan and Liguasan, Mindanao, P. I., May 27, 1904.

Plegadis falcinellus (Linnæus).

GLOSSY IBIS.

Great numbers of glossy ibises frequent the lakes and rivers of Mindanao. A female (No. 192,079, U. S. National Museum) was shot by Captain William D. Davis, 17th Infantry, U. S. Army, on an estuary near Seranaya, Rio Grande Valley, Mindanao, P. I., March 14, 1904. Captain Frank R. McCoy also brought me a specimen which I did not preserve. There is a mounted specimen in the Jesuit Museum, at Manila.

Herodias timoriensis (Cuvier).

AUSTRALIAN WHITE EGRET.

Captain Frank R. McCoy shot a specimen (No. 192,074, U. S. National Museum) at Varicella, Upper Agusan River, Mindanao, P. I., May 9, 1904;

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* Contributions to Philippine Ornithology, Part I.—A List of the Birds known to inhabit the Philippine and Palawan Islands, showing their distribution within the limits of the two groups, *Proc. U. S. Nat. Mus.*, Vol. XX, No. 1134; 1898, pp. 549 to 625, with maps.

and others were seen on the Agusan and Rio Grande rivers. In the specimen taken the iris was pale yellow, almost white; bill yellow; legs and feet purplish black. The following measurements were taken from the skin: Wing, 350 mm.; tail, 140; culmen, 98; middle toe and claw, 97; tarsus, 141; bare portion of tibia, 94.

Loriculus galgulus (Linnæus).

BLUE-CROWNED LORIKEET.

I obtained a pair of these birds alive, on the island of Cagayan Sulu, P. I., February 26, 1904. The female escaped at Zamboanga, Mindanao; but the male (No. 191,871, U. S. National Museum) was preserved.

Collocalia francica inexpectata (Hume).

ANDAMAN ISLANDS SWIFTLET.

I collected four specimens (Nos. 191,886–9, U. S. National Museum) of this swiftlet on the island of Cagayan Sulu, P. I., February 26, 1904. It was very abundant about the mountain cliffs of the island.

Hirundo rustica rustica Linnæus.

COMMON SWALLOW.

I obtained a typical specimen (No. 190,261, U. S. National Museum) at Pantar, Mindanao, P. I., September 9, 1903. My series of swallows from Mindanao shows intergradation between the subspecies *rustica* and *gutturalis.*

VOL. XVIII, PP. 91-106 MARCH 31, 1905

PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

AN INTERESTING SPECIES OF FISH FROM THE HIGH ANDES OF CENTRAL ECUADOR.*

BY BARTON WARREN EVERMANN
AND
WILLIAM CONVERSE KENDALL.

By permission of Hon. George M. Bowers, Commissioner of Fish and Fisheries.

Through the kindness of Dr. S. Austin Davis, surgeon of the Guayaquil and Quito Railway Company, the Bureau of Fisheries has recently come into possession of a number of excellent specimens of a very rare and little known species of fish from the high Andes of central Ecuador.

According to the classification of Eigenmann and Eigenmann,† these specimens belong in the Siluroid family Argidæ, and are beyond doubt the *Pimelodus cyclopum* of Humboldt or *Cyclopium cyclopum* of later authors. But in a recent monograph of the fishes of the family Loricariidæ,‡ by Mr. C. Tate Regan, that author regards the specimens identified by Eigenmann and Eigenmann as *Cyclopium cyclopum* as belonging to a different and undescribed species which he names *Arges eigenmanni*.

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* Read before the Biological Society of Washington, January 23, 1904.

† A Revision of the South American Nematognathi or Catfishes, Occasional Papers Cal. Ac. Sci., I, 1890, 347-351.

‡ A Monograph of the Fishes of the Family Loricariidæ, Trans. Zool. Soc. London, XVII, Part III, Oct., 1904, 191 to 326, Plates XV-XXI. Rec'd Oct. 13 and read Nov. 17, 1903. Since the receipt of Mr. Regan's monograph this paper has been rewritten.

Recognizing Regan's classification, our specimens would represent his species. However, for reasons appearing further on in this paper, we are convinced that *Cyclopium cyclopum* is the valid name for them.

Our collection contains specimens representing both the eastern and western slopes of the Andes, but from very closely neighboring localities. These specimens exhibit considerable variation among themselves and show that previous descriptions have been not wholly accurate. The discrepancies indicate that certain changes in the present arrangement of the genera and species are necessary and suggest the possibility that future investigations may necessitate still further modifications in our views of the whole family.

In the present paper we present at some length the data which these specimens furnish and indicate the conclusions to which they point in the thought that this will prove of use to others who may have occasion to study these fishes.

CLASSIFICATION AND SYNONYMY.

The classification adopted by Eigenmann and Eigenmann is based upon the descriptions by previous authors and a few specimens of *Cyclopium cyclopum* in the Museum of Comparative Zoology at Cambridge, which we also have been privileged to re-examine, through the kindness of Prof. Samuel Garman. Eigenmann and Eigenmann include three genera in the Argidæ, which they separate as follows:

a. Adipose fin a long, low fold of skin which gradually merges into the dorsal profile anteriorly and posteriorly; lower lip very broad. *Arges.*
aa. Adipose fin short, with a spine placed near the tail. *Cyclopium.*
aaa. Adipose and ventral fins wanting. *Astroblepus.*

Under the genus *Arges*, they place *Arges sabalo* of all previous writers; *Brontes prenadilla* Cuvier & Valenciennes; *Arges prenadilla*, Steindachner; *Arges brachycephalus* Günther; *Arges longifilis* Steindachner; and *Arges peruanus* Steindachner.

In the genus *Cyclopium* are the one form which has borne the various names, *Pimelodus cyclopum* Humboldt; *Stygogenes cyclopum*, Günther; *Cyclopium cyclopum*, Putnam; *Cyclopium humboldtii* Swainson; *Stygogenes humboldtii*, Günther; and the additional species, *Stygogenes guentheri* Boulenger.

The third genus contains but one species, *Astroblepus grixalvii* Humboldt.

The genus *Arges* was erected by Cuvier and Valenciennes* to include those species having bifid teeth and a "long, low adipose fin." It was distinguished from *Brontes* by the latter's having no adipose fin. The first included *Arges sabalo* and *Arges cyclopum;* the second *Brontes prenadilla* which Valenciennes says is of identical structure in every way with *Arges cyclopum* except that it has no adipose fin. He further says regarding the latter:

> They have shown to me that the fish of M. Boussingault indicates the place that should be assigned to *Astroblepus.* It is, if the term be allowable, an apodal *prenadilla;* and the *Pimelodus cyclopum* is very probably of the same genus as the *sabalo.*

Steindachner has re-examined the types of *Arges sabalo* and one of the two type specimens of *Brontes prenadilla.* Regarding the latter he says: †

> Valenciennes's assertion that an adipose fin before the caudal is lacking, is erroneous, and the figure in l'Histoire Naturelle in plate 444 is one of the numerous errors in this work.

He further states that Günther's *Arges brachycephalus* is identical with *Arges prenadilla* Cuvier & Valenciennes.

These two positive assertions, of Valenciennes and Steindachner, respectively, become significant from an examination of our specimens. When first received these examples revealed no trace of an adipose fin excepting what was soon discovered to be a short spine, sometimes naked but in most cases concealed under the skin, evidenced only by a slight elevation, which was at first regarded as a "short adipose fin"; but in alcohol there gradually appeared on the back a low, thick, fleshy fold which increased in resemblance to a thick adipose fin with their continuance in the preservative, and, in the smaller individuals, became thin and very much like an adipose fin in appearance.

Regarding the adipose fin in *Arges sabalo*, Steindachner says (l. c., p. 18):

> A more or less puffed, rather deep fold of skin begins on the back behind the dorsal, at a distance equal to the whole or rather more than half the length of the base of the fin, and unites with the upper caudal

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* Hist. Nat. Poiss., XV.

† Flussfische Sudam., IV, 21.

ray, the short upper rays of this fin being completely surrounded by it. A puffed fold of skin surrounds the lower short rays of the caudal.

Referring to *Arges longifilis* (l. c., p. 20), he says:

> The fold of skin on the back is in some more, in others less, fleshy, and of equal height and length with *A. sabalo;*

and regarding some very small examples, 4.5 to 5.5 cm. long, he further remarks:

> The fold of skin on the back is very distinct throughout its length, and very thin.

Concerning *Arges prenadilla*, he says, on this point:

> A plainly visible seamlike fold of skin on the back begins over and a little in front of the anal and extends to the caudal, uniting with the upper ray of the fin.

In another place he states:

> In my opinion Günther's species of *Arges brachycephalus* is identical with *Arges prenadilla*,

and he goes on to say regarding three examples (male and female) which he believes to be the same species, from Peru, measuring 4.5, 5 and 9 cm.:

> The two little specimens are especially noteworthy in that they show not the slightest trace of the adipose fold, but as to depression and form of head they correspond almost exactly with 7 cm. specimens of *Arges sabalo* previously mentioned.

However, Steindachner's figures of *Arges sabalo* and *Arges longifilis* show a decidedly high and thin adipose fin which, from his description, must be inaccurately represented. Regarding his *Arges peruanus*, Steindachner says (l. c., p. 21):

> The adipose fin resembles a long thickish fold in the skin, of slight elevation, gradually losing itself before reaching the caudal;

but his figure shows even no trace of such a fold.

These descriptions show conclusively that what has been so regarded is not a true adipose fin, which conclusion our specimens substantiate. It is evident that the presence of the supposed adipose fin on the different species, is simply due to the action of the preservative and that there is no true adipose; and the smaller the individual and the longer its stay in the preservative, the more like an adipose fin the fold may become.

Since the publication of Eigenmann's South American Nematognathi, Boulenger writes : *

> Leaving aside the two or three species in which a spine is present between the rayed dorsal fin and the caudal, whether exposed and supporting the small adipose fin or partly imbedded in the skin, and for which the name *Stygogenes* Günther may be retained, I find upon examination of the material in the British Museum, and after perusal of Dr. Steindachner's descriptions, that as many as six species of the genus *Arges* are entitled to distinction.

He further says:

> *A. longifilis, sabalo, taczanowskii*, and *peruanus* inhabit the Andes of Peru, *A. prenadilla* and *whymperi* the Andes of Ecuador. I had originally confounded the two latter species, when Mr. Whymper submitted to me his specimens for identification some years since, but renewed examination has convinced me that there are at least three kinds of "Prenadillas" in Ecuador, instead of one as believed by Putman.

He then retains *Stygogenes* Günther instead of *Cyclopium* Swainson for the form with the spine on the caudal peduncle, and *Arges* for the one with no spine and more or less of an "adipose fin." Our specimens belong to the first named group. *Arges whymperi* is doubtless an individual variation of *Cyclopium cyclopum* as indicated by our specimens, since they show that the presence or absence of a spine is not even a specific difference. *A. whymperi* has no adipose fin and no spine. *A. taczanowskii* possesses a low fleshy fold which is supposed by the authors to be an adipose fin, and has no spine, and represents the *sabalo* group of Peru.

In 1898 Boulenger described a species from Ecuador,† under the name *Arges festæ*, which appears to be valid. In the same paper he redescribes *A. prenadilla*, regarding which he wrote that the examples confirmed the identity, recognized by Steindachner, of *Brontes prenadilla* C. & V. and *Arges brachycephalus* Günther.

Regan (l. c.) has recently made radical changes in the classification of this Siluroid group and described a number of new species. He objects to the family name Argidæ of Gill and includes the group in a subfamily Argiinæ in the family Loricariidæ.

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* Description of two new species of the Siluroid Genus *Arges*, Proc. Zool. Soc. London 1890, 450 to 452, and plate.

† Poissons de l'equateur Boll. du Mus. Zool. ed Anat. Comp. R. Univ. Torino, XIII, No. 329, 1898, Pl. XXI, Fig. 7.

The following list enumerates the characters which, according to Regan, distinguish the subfamily Argiinæ from the other subfamilies of the Loricariidæ, and which, as suggested by Dr. Gill, and according to our own view, are sufficient to establish a well marked family :

Teeth in jaws in more than one series ; no pseudobranchiæ ; body naked, no bony plates or scutes ; rudimentary ray of ventral present, represented by a small internal round plate ; stronger ribs ; neural and hæmal spines somewhat less expanded ; pterygoid small, instead of large and not connected with the prefrontal ; clavicle and coracoids running somewhat forward to their symphyses instead of the lower portions lying transversely between the bases of the pectorals.

In this subfamily, as he regards it, Regan recognizes only one genus, *Arges*, substituting Cuvier & Valenciennes's name for Swainson's *Cyclopium* for the following reason which he gives in a footnote on page 307 (l. c.) :

> Swainson established the genus in these words : "The third genus is that by which we distinguish the *Pimelodus cyclopum* of Humboldt (*Cyclopium humboldtii* Sw.)." His generic name being derived from the genitive plural of *Cyclops*, is as inadmissible as would be that of *Silurorum*.

While most American zoologists regard as very objectionable the use in generic nomenclature of the genitive plural form of a substantive, they do not hesitate to accept such words when once used, retaining the original spelling. Any other practice tends away from stability of nomenclature. But whatever view one may hold regarding this matter, Mr. Regan's contention does not hold in the case under consideration. *Cyclopium* is not the genitive plural of *Cyclops*, as he imagines, but the neuter form of the adjective *cyclopius*.

The only character that separates the genera *Arges* and *Cyclopium* is the presence of a spine in the location of the "adipose fin" of the latter. That this spine may have been easily overlooked in other specimens, since it is so often concealed under the skin in ours, is evident. By an examination of specimens of the species of *Arges*, it is possible that a spine may be found. This character is therefore of doubtful value.

Regarding *Astroblepus*, it remains to be said that, for the same reason, the absence of an adipose fin in that genus is of no importance and the only distinctive character is the very improbable absence of ventral fins.

Regarding this genus Regan remarks that it is allied to *Arges*, differing only in the absence of ventral fins; that it is possible that this feature is abnormal or accidental and that the genus may be founded on a specimen of *Arges brachycephalus* or an allied species.

Astroblepus grixalvii is known only from the very imperfect description and monstrous figure of Humboldt; and it probably never will be found so long as one of this group without ventral fins is looked for. It is not improbable that *Cyclopium guentheri*, occurring in the same river basin in which the *Astroblepus* was found common enough to be used as food by the inhabitants is identical with it. Humboldt says regarding it:

> The *Pescado negro*, which is largely eaten at Popayan, is not found in that part of the Cauca River which is nearest the city. The physical cause of this phenomenon is quite remarkable. A river impregnated with sulphuric acid descends from the volcano of Purace to which the inhabitants give the name of Vinegar River. It is known by the beautiful cascade which it makes at the foot of the volcano. From the point where the waters of the Vinegar River mingle with those of the Cauca River, as far as four miles farther down, the latter is without fish, although in its upper part the fish are quite abundant. Small quantities of the acid, which were taken for our chemical analyses, are often considerable enough to injure the organization of fishes.

Regan recognizes nineteen species of *Arges*, to eight of which he gives new names. Of the eight supposed new species four are founded on forms which had been regarded as known species. *Arges boulengeri* is based on *Stygogenes humboldtii* of Boulenger, but not of Swainson. *Arges eigenmanni* is the *Cyclopium cyclopum* of Putnam, and Eigenmann and Eigenmann (not *P. cyclopum* Humboldt). *Arges cyclopum* is redescribed from four specimens from some unknown locality. *Arges vaillanti* is based on a single specimen sent from the Paris Museum as *Brontes prenadilla*. *Arges fissidens* is founded on a part of Boulenger's *Arges whymperi* (two specimens).

There is a key to the species the main divisions of which are based on the character of the adipose fin. The other divisions are based on extent of ventrals and pectorals, character of teeth, position of ventral, etc. Among our specimens there are individuals which fall respectively into several of his main categories, excepting that of a well developed adipose fin without trace of spine. In other words, judging by the principal divisions alone, we have *A. clycopum*, *eigenmanni*, *prenadilla* and *fissidens*. They do not agree, however, in some other points, which, if given consideration, prevent us from identifying our specimens with any of his species. There is no doubt of the specific identity of our specimens. The differences are mostly due to age, size and sex. The adipose fin, as we have shown before, is of doubtful value, and of no value whatever in the species to which we have just called attention. The development of the spine may be of value in larger specimens but in one of two small specimens we have there is a long spine connected posteriorly with the caudal peduncle and in the other there is in addition to the spine a long, moderately developed adipose fin. Most of the other spines are small, just visible, imbedded in the skin and appearing only as tubercles or not at all apparent.

In the males, as already remarked, the ventrals are inserted farther forward than in the females ; therefore, comparison of extent of pectorals with ventrals or ventrals with proximity to vent is of no value. In fact, there is such a range of variation in these characters, regarded by Regan as showing specific differences, that there arises a serious distrust of the value of any of them for that purpose. Regan had the advantage of material representing more species and localities than we have, but in view of the foregoing fact the suggestion offers itself that unless there are other grounds for separation, the five alleged Peruvian species may be, if not all one, certainly not more than two species at greatest.

Regan's figures of the various species show more dissimilarities than do his descriptions, but even the figures, taken in conjunction with the variations in our specimens, indicate that *homodon* and *guentheri* are possibly the two sexes of the same species. Among the Ecuador species, one of the Atlantic slope forms, *A. festæ*, is clearly a distinct species, as shown by the elongate nasal barbel.

There seems hardly ground for identifying Madame Ida Pfeiffer's specimens as *A. cyclopum* and establishing a new species on individuals that agree more closely with the original description and plate than the others do. *Arges whymperi* and *fissidens* have but little left by which to distinguish them and the same may be said of *sabalo*, *taczanowskii*, *vaillanti* and *prenadilla*.

Since the male examples of our specimens agree with all that has been said of *Arges prenadilla*, and the females equally as well with *Cyclopium cyclopum*, we are forced to unite these two forms in the genus and species *Cyclopium cyclopum*, which will include *A. eigenmanni* and perhaps *whymperi* of Regan. There is nothing in the laws of nature, so far as we know, to prevent the existence of a number of genera and species of this group of fishes; but the indications derivable from the literature and material at hand are that the number may be still further reduced as a result of more extended investigations, and there may be but one genus, *Astroblepus*, to include all the nominal species.

The following description of *Cyclopium cyclopum* is based on two individuals, female and male, each about 3.12 inches in length, in the collection sent us by Dr. Davis:

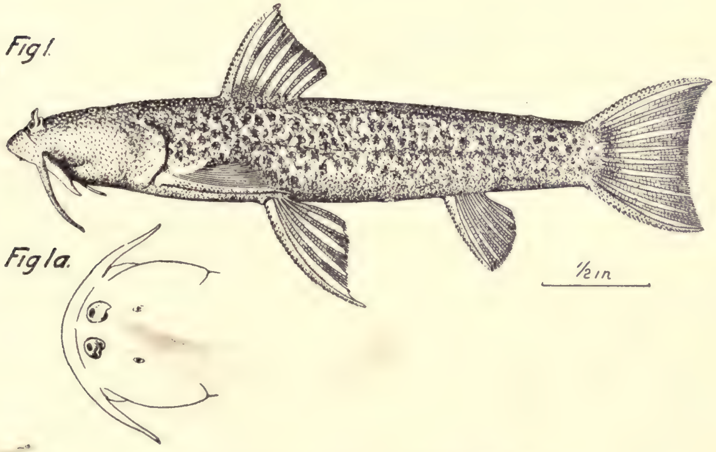
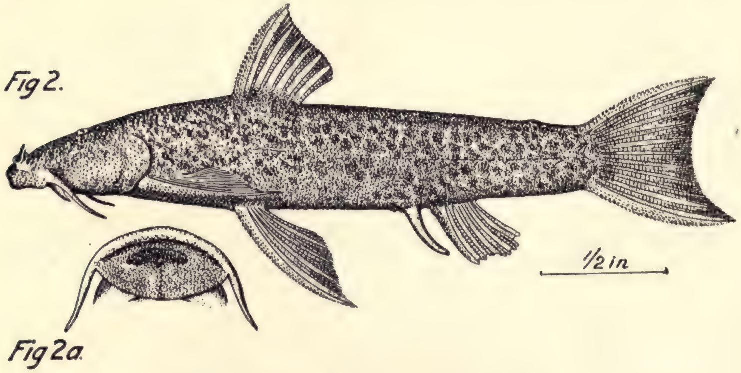


Fig 1.
Fig 1a.
½ in

Figs. 1 and 1*a*.—*Cyclopium cyclopum*, female.

Female.—Head 4.18 in length to base of caudal; D. 7; A. 7; P. 10; V. 5; C. 13. Body rather robust, somewhat depressed anteriorly and compressed posteriorly; a thick fleshy fold or ridge (after months in alcohol), somewhat arched, extending from a short distance back of dorsal to base of upper ray of caudal, with a small rough, nearly concealed, spine posteriorly; skin rather loose and wrinkled, full of fine mucous pores posteriorly to dorsal, coarser in front; first dorsal, outer pectoral and ventral and upper and lower caudal rays slightly produced; ventral somewhat rounded; first or outer rays of all fins spinuliferous; longest ray of pectoral just reaching base of outer ray of ventral; insertion of ventral about under middle of dorsal; ventral reaching slightly beyond vent but not to anal; head rather broad and depressed; gill-openings reaching below base of pectoral, membranes broadly attached to isthmus; gills 4, no slit or pore behind the last; cheeks tumid; eyes minute, vertical, covered by the common outer skin and situated about midway between nostrils and upper angle of opercle; interorbital space about equaling distance from posterior edge of nostril to eye; barbel reaching somewhat beyond cheek; nasal openings separated by an irregular triangular flap; mouth opening inferior; upper lip thick, plicate and papulose; lower lip expanded, papulose, with median suture connected by the skin, posterior margin rounded, slightly notched; teeth in several rows in each jaw; upper teeth simple, somewhat curved, conical, some of them somewhat expanded at end, teeth of inner rows all bifid; lower jaw bones separate, connected only by the membrane; teeth all bifid, situated only at the expanded inner ends of the bones.

Color, olive-gray, thickly clouded with darker; fins all barred with dark gray.



FIGS. 2 and 2*a*.—*Cyclopium cyclopum*, male.

Male.—Head 4.28 in length to base of caudal; D. 7; A. 6; P. 10; V. 5 C. 13. Body rather slender, differing remarkably in appearance from the female; more depressed anteriorly and more compressed posteriorly; posterior dorsal fold not so noticeable, barely evident; spine hardly distinguishable through the skin; pores on anterior part of body coarser than in the female; outer ventral and lower caudal ray, somewhat more produced; the first rays of all fins spinuliferous; pectoral reaching beyond base of ventral; ventral inserted under or slightly in advance of front of dorsal, not reaching vent; head much flatter and somewhat broader than in female. Color, similar to female but much darker. Sexes otherwise readily distinguishable by the long papilla just posterior to the vent in the male, probably serving as an intromittent organ; this organ somewhat distant from the front of anal but apparently representing the 7th ray which is always present in the females and absent from the fin proper in the males. These females contain ovaries with rather large but still immature ova.

There are several young individuals in our collection. The smallest of these is a trifle more than 1 inch in total length and has the dorsal fold conspicuous and thin and the posterior dorsal spine not concealed but comparatively long and spinuliferous. The color now is plain light brown.

TABLE OF PROPORTIONAL MEASUREMENTS OF SPECIMENS OF *Cyclopium cyclopum.*

LOCALITY.	PALMIRA PASS.						ALAUSI RIVER.	
Number of specimen	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*
Sex	♀	♀	♀	♀	♀	♂	♀	♂
Total length in inches	3.20	2.56	2.72	2.40	2.60	3.20	3.32	2.92
Head in length without tail	4.18	4.31	4.14	3.70	4.00	4.28	3.88	3.86
Depth " " " "	5.58	5.20	5.04	5.00	4.90	7.61	5.00	5.27
Width of head in length of head	1.08	1.11	1.07	1.22	1.17	1.08	1.05	1.03
Maxillary barbel in head	2.46	2.41	2.00	2.73	2.00	2.00	1.89	1.85
Interorbital width in head	3.55	3.62	3.50	3.85	3.85	4.00	4.00	3.75
Distance from D. to C. in length without tail	2.03	2.08	2.14	2.00	2.03	1.67	2.18	2.07
Distance from mouth to D. in length without tail	2.68	2.71	2.52	2.50	2.76	2.58	2.59	2.41
Longest dorsal ray in head	1.52	1.45	1.55	1.58	1.50	1.52	1.38	1.42
Longest anal " " "	1.77	1.70	1.75	1.80	1.68	2.00	1.80	1.87
Longest pectoral " " "	1.18	1.20	1.07	1.12	1.22	1.23	1.13	1.07
Longest ventral " " " *	*a*	*a*	*a*	*c*	*a*	*b*	*b*	*c*

* *a.* slightly longer; *b.* slightly shorter; *c.* same length.

The fin formulas are as follows: D. 7 (9 in No. 4); A. 6 in ♂, 7 in ♀; P. 10; V. 5; C. 13 (11 in No. 8 and 12 in No. 9).

SIZE AND DISTRIBUTION.

In the Riverside Natural History, page 114, it is stated that—

> The five or six known species of Argidæ reach a length of 2 or 3 inches only, and inhabit the ponds and springs of the upper Andes on the Peruvian or Pacific slope, where they take the place occupied by the Loricariidæ on the Atlantic side.

In this statement there are two errors. First, regarding the size; the type of *Arges sabalo* was about 21 cm. or about 8.25 inches long, and Steindachner mentions examples 11 to 32 cm. long (about 4.4 to nearly 13 inches); and *Astroblepus grixalvii*, Humboldt says reaches a length of 14 inches. According to Steindachner, *Arges longifilis* ranges from 9.5 to 18 cm. (about 3.8 to 7.2 inches). The other species of *Arges* and of *Cyclopium* are small. Regarding the restriction of the species to the Pacific slope of Peru, it may be said that most of the recorded localities in which the different species of *Arges* and *Cyclopium* have been obtained, are in the Atlantic drainage. Regan places all of the species of the genus *Arges* excepting *cyclopum*, *whymperi*, *eigenmanni*, *chotæ*, and *simonsii* in the Atlantic drainage, the exceptions occurring only in the west coast streams of Peru and Ecuador. Orton's specimens, which Putnam identified as *C. cyclopum* and which Regan says are the same as his *Arges eigenmanni* are from both drainages in Ecuador. *Stygogenes humboldti* Günther is from the Amazon basin in Ecuador. *Brontes prenadilla* Cuvier & Valenciennes is from the east slope of Cotopaxi. Our specimens are from both slopes of the Andes of Ecuador.

Of the nineteen nominal species recognized by Regan, four are exclusively of the west coast drainage, two at least are common to both slopes, and the remainder restricted to the Atlantic drainage.

HABITS.

For the following interesting account of the habits of these fishes we are indebted to Dr. Davis:

> The specimens from Alausi River were found in a bight made by deviating the channel for purposes of railway construction. The stream at the point mentioned has a fall of about 200 feet to the mile, and an elevation above the sea of 9,400 feet. The water of the Alausi River reaches the Pacific Ocean via the Guayas River.
>
> The specimens from Palmira Pass or Desert were taken from small brooks flowing through deep channels cut in the volcanic deposits of which the desert is largely composed, and were found in some instances at the very sources of some of the rivulets, where the water seeps, spring-like, from under the vertical walls of volcanic dust. These streams finally reach the Atlantic through the Amazon River. The elevation of these waters is about 10,500 feet and a strip of desert about 2 miles wide, and perhaps 200 feet vertically, is all that intervenes between the headwaters of streams on the Atlantic slope and the Alausi which does not come from the desert but flows past its southern approach and to the Pacific.
>
> The fish usually remain quietly on the creek bottom, sometimes in sight but preferably under stones, aquatic plants or overhanging banks. They are quiet unless disturbed, when they are active in getting out of

sight. In captivity, as when under observation in a wash basin they make use, after a while of their organ of locomotion, by climbing up the side of the dish, out of the water, and shoving themselves along on the shelf or the floor. They appear not to suffer as other fishes do when out of water, as I have found them on the floor some hours after having left the water, judging from lack of moist traces of their progress, quite active and shoving themselves along by the aid of their sucker-mouth and the organ of locomotion. This is a bony plate under the skin of the belly, freely movable for ½ inch to ¾ inch to which are attached 2 pairs of cord-like muscles, one pair passing forward to near the junction of head and one pair ending just forward of the anal orifice. On each side of this plate is attached a ventral fin moving with the plate and having its chief bone finely tuberculated, the minute points of which tubercles, being directed backward, aid in locomotion by engaging the surface over which the fish travels.

The fish appears to be able to move over the ground or other surface in 2 ways, one when the mouth is fixed and the body brought forward by being arched, when the mouth is loosed and the head advanced; the second as when the roughened fin-bones act as a fixed point, the body being shoved forward by a jerky motion by the contraction of the posterior pair of muscles, when the fins are then hauled forward by the anterior pair of muscles to repeat the act.

The food of this fish may be known by an examination of the stomach contents and is determined naturally by the sort of supply furnished by the locality of capture. Those from the quiet water of the bight of the Alausi contained grains of sand, portions of aquatic plants, about a dozen different forms of diatoms, and bunches of hooklets, smooth and toothed, the origin of which I do not know.

The stomachs of the fish from the desert are stuffed with insect larvæ of various sorts, the same being very plentiful in those streams. I found no diatoms in these specimens.

In connection with the foregoing sketch by Dr. Davis, of his observations in Ecuador, the following account by Humboldt of the same region and fish may be of interest. Cuvier and Valenciennes quote freely from it and add effusively to Humboldt's description of the very remarkable phenomenon, the absurdity of which must be apparent to every one.

It is probably a fact that the fish have appeared on the plains below the volcanoes after an eruption, but it is, of course, unnecessary to explain that they probably were washed there by the freshets of the mountain streams caused by the volcanic or seismic disturbances. Humboldt says:

> The volcanoes of the province of Quito eject pumice, basalt and porphyritic scoriæ, and great quantities of carburetted water, and clay mud, which spread to a distance of 8 or 10 miles. Yet the volcanoes of the district of

Quito present from time to time another phenomenon less alarming but not less astonishing to the naturalist. The great eruptions are periodical and quite rare. Cotopaxi, Tungurahua and Sangay (sometimes not for 20 or 30 years,—but in the intervals) vomit up enormous quantities of clayey masses and, wonderful to state, an immeasurable quantity of fishes. It is regretted that one of these volcanic floods did not occur while I tarried in the Andes of Quito, but the eructation of fishes is a phenomenon so common and so generally known by all the inhabitants of this country that there can not be the slightest doubt concerning its authenticity. There are in this region many well-informed persons and even those of scientific attainments from whom I was able to procure exact information about these fishes. While searching the annals of many small towns in the neighborhood of Cotopaxi, I have sometimes found records of fishes cast out by volcanoes. Upon the lands of the Marquis of Selvalegre, Cotopaxi ejected so great a quantity that their putrefaction spread a fetid odor far and wide.

In 1691 the nearly extinct volcano of Imbaburu vomited thousands into the environments of Ibara. The pestilential fevers which occurred about this time were attributed to the miasmas which the fishes, heaped upon the ground and exposed to the sun, exhaled. In recent times Imbaburu has continued to throw out fishes. In the eruption of June 19, 1698, the volcano of Caqueirazo threw out from its summit thousands of these animals enveloped in clay or mud.

Cotopaxi and Tungarahua cast forth fishes, sometimes through the crater at the summit, sometimes through lateral fissures, but always at an elevation of 15,000 or 15,600 feet above the surface of the sea. Now the plains there about being nearly 7,800 feet in altitude, it may be seen that these animals emerge from a point that is 7,800 feet higher than the plains upon which they are thrown. Some Indians have assured me that the fish vomited by the volcanoes were sometimes still living on descending the length of the side of the mountain, but this fact does not seem to me to be sufficiently substantiated. It is certain, however, that among the thousand of dead fishes that in a few hours can be seen descending from Cotopaxi with great quantities of cold and fresh water, there are but few that have been so affected as to cause one to believe that they had been exposed to the action of a strong heat. That fact becomes still more astonishing when one considers the soft skin of these animals and the thick steam that the volcano breathes out at the same time. It has seemed to me to be a subject of very great interest for descriptive natural history to correctly prove the nature of these animals. Every inhabitant agrees that they are identical with those that have been found in the streams at the foot of these volcanoes and which have been called prenadillas. It is even the only species of fish that has been discovered above 8,400 feet in the waters of the district of Quito. This small fish lives in waters which have a temperature of 10 degrees Centigrade, while other species of the same genus live in the rivers of the plains, of which the water is 27 degrees.

According to the enormous quantity of pimelodes which are vomited from time to time from the volcanoes of the province of Quito, one would not dare to doubt that the country contains some great subterranean lakes which conceal these fishes, because the specimens that live in the small rivers around about are very few in number. A part of these rivers ought to communicate with these subterranean cavities, and it is very probable that the first pimelodes which have populated these caverns have remounted there against the current. In the province of Quito the subterranean roaring which accompanies the quaking of the ground, the masses of rocks which one would expect to cave in from the arched roof upon which he walks, the immense quantity of water which emerges from the ground in the thinnest portions; then the volcanic explosions and a number of other phenomena show that the entire ground of this plateau is undermined. But, if it is easy to conceive that the vast subterranean basins are filled with water and that they can nourish fishes, it is less easy to explain how these animals are aspirated through the volcanoes, elevated to 7,800 feet and vomited, sometimes through the craters and again by means of openings in the sides. Would it be possible to suppose that the pimelodes live in the subterranean basins at the same height at which they are seen emerging? How can their origin be conceived in a position so extraordinary, in the side of a cone so often heated, and perhaps in part produced through the volcanic fire? What can be the method by which they are cast out with the form not disfigured, which would be expected, by these volcanoes, the highest and most active in the world, causing from time to time convulsive movements, during which the release of heat appears less considerable than one would expect it to be. The tremblings of the ground do not always accompany these phenomena. Perhaps in the different caverns that occur in the interior of a volcano the air is from time to time condensed, and that it is this condensed air which aids to raise the water and fishes; perhaps they emerge from a concavity removed from those that give out the volcanic fire; perhaps, finally, the clayey masses in which these animals are enveloped protect them from the action of an extreme heat.

VOL. XVIII, PP. 107-110 MARCH 31, 1905

PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

NEW GENERA AND SPECIES OF PERLIDAE.

BY JAMES G. NEEDHAM.

I have had in my hands for study for a long time a single adult specimen of a peculiar stone-fly from Ithaca, N. Y., and a number of larvae from the same locality. The imago was taken at light by Professor R. H. Pettitt in June, 1891, and the larvae were collected by Mr. G. H. Jensen in 1898. Some years ago, in working up a key to our genera of stoneflies, Professor Comstock recognized that the adult represents a new genus, and so indicated, on a label in the collection, without applying a name. Recently, in working on a monograph of our North American stoneflies for a New York State Museum bulletin, I have studied its characters. In both larval and adult stages it is one of the best marked of our genera. I describe it below, reserving more complete description and figures for the forthcoming bulletin.

Peltoperla gen. nov.

Type.—Peltoperla arcuata sp. nov.

Ocelli two; prothorax wider than the head, which it partly covers, and with broadly flaring margins at the sides as well as in front. The segments of the palpi increase in length to the tip; tarsi, with the two basal joints very short, and the third joint very long. Subcosta conjoined with the radius before the cross-vein at the stigma; apical costal area with numerous cross-veins; radial sector with several branches beyond the cross-vein at the stigma. The branches of vein Cu_1 in the fore wing are attached to its anterior side.

The larvae, found among dead leaves in a spring-fed brook, are of very unusual appearance ; short and thick, with unusually short and close-ringed antennae and setae; thorax highly and smoothly arched, its thin and flaring margins overlapping the very few and very thick, single gill filaments.

Peltoperla arcuata sp. nov.

Length of body, 10 mm. ; length to wing tips, 18 mm.; expanse of wings, 34 mm.

A long winged perlid with short and flat body ; head distinctly narrower than the prothorax, and retracted under its front margin. The two ocelli equidistant from each other and from the eyes ; antennae long and slenderly tapering, pale brown ; disc yellowish, minutely pilose.

Prothoracic disc with its thin, projecting edges slightly upturned before and behind, its front margin straight, its hind margin very convex, its front angles very slightly and its hind angles very broadly rounded, and its sides parallel. Color pale brown, yellowish around the hind margin and along the middle line ; there are a few broad, irregular and indistinct corrugations upon the disc.

Mesothorax pale brown. Wings nearly uniform brownish hyaline, the veins slightly darker ; legs pale yellowish brown slightly darker at the joints ; their bases separated by very broad sterna. The metathoracic sternum broadly overlaps the first abdominal segment and is emarginate in the middle of its hind margin.

Abdomen yellowish, each segment with an obscure brown basal band on the dorsal side, continued below on segments 8 and 9 ; segment 10 yellow ; setae yellow, short, hairy, hardly longer than segments 9 and 10 together and greatly surpassed by the wing tips. The sternum of the 8th segment (female) is produced backward nearly to the tip of the 9th segment in a very broadly rounded lobe.

The genus Perlinella (type *Perla elongata* Walsh=*Perla trivittatta* Banks) is somewhat like Peltoperla in the distribution of branches on the cubital vein.

Neoperla nom. nov.

Type.—Perla occipitalis Pictet.

Replacing *Pseudoperla* Banks, Trans. Amer. Ent. Soc., vol. 19, p. 342, preoccupied by Pictet in Orthoptera.

A number of specimens of both sexes of the little known *Perla cyrene* Newman from New Zealand, kindly sent me by Messrs. G. Howes, of Dunedin, and G. V. Hudson, of Wellington, and by Mr. Arthur M. Lea, of Hobart, Tasmania, have enabled me to study this interesting species. Mr. Hudson, in his excellent little book, "The Neuroptera of New Zealand," has expressed the opinion that this species has little affinity with the others with which it has been hitherto associated. That opinion my study of its structure abundantly confirms. It should constitute another peculiar antipodean genus, which I herewith briefly characterize.

Austroperla gen. nov.

Type.—Perla cyrene Newman.

Ocelli three, the median one minute; palpi short, with thickened terminal joint; mandible with a well developed internal molar surface and strong end teeth; tarsi with middle joint very short, but with the first joint more than half as long as the third (as in *Eusthenia*).

Subcosta conjoined with radius beyond the crossvein of the stigma; crossveins in the apical costal area few, in the subapical, more numerous; radial sector 2-3 branched beyond the crossvein at the stigma. The median vein in the fore wing is very much curved, exaggerating in its middle portion the basal curvature of the radial sector; and the branches of vein Cu_1 are attached upon its anterior side; crossveins regular.

Among some interesting Perlidae sent me by Mr. S. I. Kuwana from the collection of Baron Takachico of Hikosan, Buzen, island of Kiushiu, Japan, were nearly all the described Japanese species, and the three following new ones:

Perla tennina sp. nov.

Length of body, 15 mm.; to wing tips, 20 mm.; antenna, 10 mm.; expanse of wings, 34 mm.

Color blackish brown, marked with dull yellow. Head hardly wider than the prothorax, the three ocelli minute, distant; disc blackish, with a triradiate mark starting forward from the hind margin, the median ray dilated and truncated anteriorly, the lateral rays slender, extending just outside the lateral ocelli; antennae and palpi wholly blackish.

Prothorax slightly wider than long, its fore and hind margins slightly convex, its sides straight and parallel, and its angles all right angles. A broad and uniform band of clear yellow lies upon the middle of the disc, which is otherwise wholly blackish brown with shining embossed markings at the sides of the yellow band. Metathorax with narrower median line, and with blotches on the wing bases.

The wings are smoky brown with blackish veins except on the costal margin where they are paler. Legs blackish brown beyond the base; all femora and tibiae are paler on the inner side beyond the basal fifth of each, and the tibiae are laterally sulcate.

Abdomen blackish, with rather short setae that do not surpass the wing tips, and that are clad with tawny pubescence. The 8th ventral segment of the female is prolonged posteriorly in a broad almost sacculately-inflated lamina which covers the 9th segment, and whose margin is upcurved and obtusely rounded.

A single female specimen: Hikosan, Buzen, Japan, 28 Apr., 1902.

Nemoura japonica sp. nov.

Length to wing tips, 10.5 to 11.5 mm.; antennae, 9 mm.; expanse of wings, 22 mm.

Color nearly uniform blackish, including the antennae, the antennal sclerite, basal segments of palpi, and bases of femora and all of coxae, somewhat paler. Antennae finely and uniformly pubescent, about 40-jointed; three terminal segments of the maxillary palpi of equal length.

The prothorax is distinctly wider than long, broadly rounded at the sides, slightly rounded in front, straight or slightly concave behind, with all its angles very obtuse.

The wings are dusky hyaline, with a faint cloud extending backward from the stigma.

Two specimens, apparently male and female (in both the abdomen is greatly contracted and bent upon itself), from Hikosan, Buzen, Japan, collected on the 23d of April, 1902.

Taeniopteryx tenuis sp. nov.

Length to tip of wings, 12 to 13 mm.; antennae, 11 mm. additional; expanse of wings, 24 mm.

Color brownish, paler beneath and on all appendages. Head rufous above and on the enlarged basal segment of the antenna. The transverse occipital margin is somewhat tumid, and is marked with fine longitudinal scars; palpi fuscous.

Prothorax quadrangular, slightly wider than long, and slightly widened posteriorly, with obtuse angles.

Wings narrow and long, smoky hyaline, with an obscure white mark just before the radio-medial crossvein, between the subcostal and cubital veins, and a smaller mark beyond this crossvein. Legs pale, clad with close brown pubescence, sutures, and tips of tarsi, darker; first and second tarsal segments of equal length, the third segment one-fourth longer.

Abdomen cylindric; 9th segment of the male elongated and upcurved in a large spoon-shaped plate which extends beyond the tip of the abdomen by the length of several segments, and is yellow, clothed externally with brown pubescence; from within its apex arises an erect appendage, shaped like a bird's head with the beak extending forward above the terminal abdominal segments in a long triangular point.

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PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

DESCRIPTION OF A NEW SPECIES OF WHIP-POOR-WILL FROM MEXICO.

BY E. W. NELSON.

For the privilege of describing this strongly marked species I am indebted to the courtesy of Dr. J. A. Allen and Mr. Frank M. Chapman, of the American Museum of Natural History.

Antrostomus notabilis sp. nov.

Type from Victoria, Tamaulipas, Mexico, No. 81,519, ♂ adult, Am. Mus. Nat. Hist. (Sennett Collection), April 13, 1888.

General Characters.—Resembles *A. macromystax* in color of upperparts, but size decidedly larger and with white marking (buffy in females) on outer tail feather reduced to a narrow diagonal band across tip as in *Nyctagreus yucatanicus* and unlike any other species of *Antrostomus* in Mexico.

Description of male (type).—Crown and nape finely mottled grayish brown, with a distinct buffy shade anteriorly; feathers on middle of crown and nape heavily streaked with broad black centers; sides of crown and nape more narrowly streaked with same, the black streaks narrowly edged with clearer gray than rest of crown; back and sides of neck with scattered indications of a buffy collar; middle of back and rump like middle of crown but more narrowly streaked and general color a little duller; scapulars basally clear gray, slightly streaked with buffy, with large irregular terminal or subterminal black spots; tertials mottled with gray and black, with irregular black shaft streaks; the light part of scapulars and tertials forming a pale area on each side of back; top of closed tail dull black irregularly mottled with dull buffy and gray forming poorly defined irregular bands on terminal half of feathers; primaries and secondaries dusky, with deep buffy spots along outer webs (most strongly marked on primaries); underside of primaries dusky, with a series of small indistinct buffy spots along middle of inner webs on distal half of first primary; other primaries with slightly larger spots on same webs; rictal bristles large and coarse as in *A. macromystax;* chin and throat dusky, finely barred with cinnamon buff and bordered below by a buffy white collar; rest of underparts dusky thickly mottled and spotted with reddish brown, gray, and white, the spotting more defined and darker on breast and paler and more diffuse on abdomen; under tail coverts deep dull buff coarsely barred with dusky; underside of outer tail feather irregularly barred with deep buffy mottling and tipped with a narrow diagonal band of white (occupying less than ¼ its length); this terminal band with its highest point on outer border of outer web; second feather with similar white band; third feather with a very narrow buffy band mainly on tip of outer web.

Female.—Generally similar to male but outer tail feathers tipped with narrower bands of dull buff and underside of tail coverts more strongly banded with buffy mottling.

Measurements of type.—Wing, 175 mm.; tail, 127; culmen, 14; tarsus, 19.

Measurements of female from type locality.—Wing, 173; tail, 122; culmen, 13.5; tarsus, 18.

Measurements of an adult male Antrostomus salvini, No. 40,093, Museum Comparative Zoology, taken at Chichenitza, Yucatan, March 19, 1904, by L. J. Cole.—Wing, 176; tail, 130; culmen, 14; tarsus, 18.

Specimens examined.—Five, as follows: Victoria, Tamaulipas, 3; Mirador, Vera Cruz, 2.

Distribution.—Eastern Mexico along basal slopes of the Cordillera from Victoria, Tamaulipas, south at least to Miradar, Vera Cruz (500 to 3,000 ft. altitude).

Remarks.—In general color this species is much like *A. macromystax* from which its larger size and peculiarly marked tail render it easily separable. In size it closely approaches *A. salvini* but the tail markings are strikingly different. The type of *A. salvini* came from Yucatan and is described and figured in the Biologia Centrali-Americana, Aves, II, p. 387, pl. 58*b*. Both Hartert and the authors of the Biologia have referred the *Antrostomus macromystax* of Baird, Brewer, and Ridgway, Birds of North America, II, p. 409, to *A. salvini*. That this is an error is shown by examination of the specimens from Mirador, described in the work cited, which are perfectly typical examples of *A. notabilis* with the distinctive narrow white tips to the tail feathers. As the white on the tail of *A. notabilis* is like that on *Nyctagreus yucatanicus* the marked difference in this character between it and *salvini* can be seen by a glance at plates 58*a* and 58*b* in vol. II of the Biologia.

VOL. XVIII, PP. 113-116 MARCH 31, 1905

PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

A NEW GENUS AND SPECIES OF LIBELLULINAE FROM BRAZIL.

BY JAMES G. NEEDHAM.

I have long had it in mind to make known an interesting new dragonfly that Mr. Adolph Hempel sent me from Ypiranga, Brazil, in 1898. Two male specimens were sent me, collected on the same day. I reported them back as new, and waited for Mr. Hempel to describe them ; but he became engrossed with important work on scale insects, and gave up all thought of work on the Odonata, and asked me to describe the new forms that he had sent me. There are perhaps a number of new species among them, but only this one that seems to represent a new genus ; and in view of the present activity in the study of the Libellulinae, I deem it advisable to make this one known.

Edonis gen. nov.

Eyes contiguous for a rather long space; frontal tubercle obtusely rounded; hind dorsal lobe of the prothorax broadly rounded and entire; venation open, six antenodals in the fore wing and five in the hind wing, all complete, and five postnodals in each wing, the first two discontinuous; a single crossvein under the stigma, with a long cell before it; one extra crossvein in the space which the bridge encloses; arculus situated nearly midway between the first and second antenodals; sectors of the arculus long-stalked; no crossvein in triangle, subtriangle or supertriangle of either wing; two incomplete rows of cells beyond the triangle in each wing, increasing but slightly to the margin; but one cubito-anal crossvein in the hind wing before the triangle; anal loop scarcely foot shaped, short, of two rows of cells with a single interpolated cell at the bend. Legs slender, femora spineless. Abdomen very slender, compressed at base, segments 2 and 3 carinate, appendages very long.

Type, the following species.

Edonis helena sp. nov.

Length, 29mm.; abdomen, 20 mm.; hind wing, 19 mm.; male.

A blackish, slender bodied, white faced species, with richly colored wings that are blotched with brown at base and iridescent-hyaline beyond. Eyes brown, paler on the superior, smaller-facetted portion. Face cream white, dotted with very minute brown punctures. Labrum black except two small oblique whitish streaks upon its base. Labium blackish. Frons above and vertex steel blue; ocelli narrowly ringed with cream white, the median ocellus twice as large as the others. Eyes contiguous for a space as great as the diameter of the vertical tubercle or of the occipital triangle. The latter is dark brown above, whitish behind, where divided by a median vertical furrow, and thinly clad with pallid hairs; rear of eyes shining black.

Prothorax black, its posterior lobe erect, entire, fringed with long white hairs. Thorax proper, brown in ground color, black below, and on the sutures; carina pale with a broad black stripe each side of it, the stripes confluent below, but isolated above and not reaching the antealar crest. Legs black, claws brown, front femora pale beneath; claws with a straight and rather large inferior tooth. Femora with spines rudimentary, the outer row represented by mere prickles, the inner one by pallid hairs. Wings diffusely marked with brown at base, the fore wings faintly marked as far as the triangle, the hind wings deeply suffused, excepting on the hind margin, almost to the level of the nodus. Venation as stated for the genus; and to be further noted, there is in each wing a sharply defined supplement (or supplementary loop) of three cells behind the radial sector while there is no median supplement at all; the second crossvein between the bases of the first and second branches of the median vein is hardly at all reversed or inclined.

The abdomen is long and slender, hardly dilated on the basal segments, but rather compressed, and there is a distinct median transverse carina only on segments 2 and 3. The color is blackish, with a longitudinal streak of pale brown upon either side of segments 2 to 7, and a short basal spot in the same position each side of segment 8. Segments 8, 9, 10 and appendages black. The anterior lamina is prominent, roundly notched on its free ventral margin, and bears a brush of stiff bristles in two dense patches on its ventral surface. The hamule is stout, its anterior lobe is uncinate, its posterior obtuse, spiniferous; genital lobe broad, spiniferous; vesicle spherical, smooth. The terminal appendages are hardly shorter than the last three segments taken together; the superiors in lateral view are decurved in their first half to a sharp inferior spine, and upcurved in their second half, to an acuminate tip; in dorsal view they are convergent in their basal half and closely parallel and straight in the apical half. The inferior appendage is simple, upcurved, and two-fifths shorter than the superiors.

Two males, Ypiranga, Brazil, March 25, 1898, Adolph Hempel, collector.

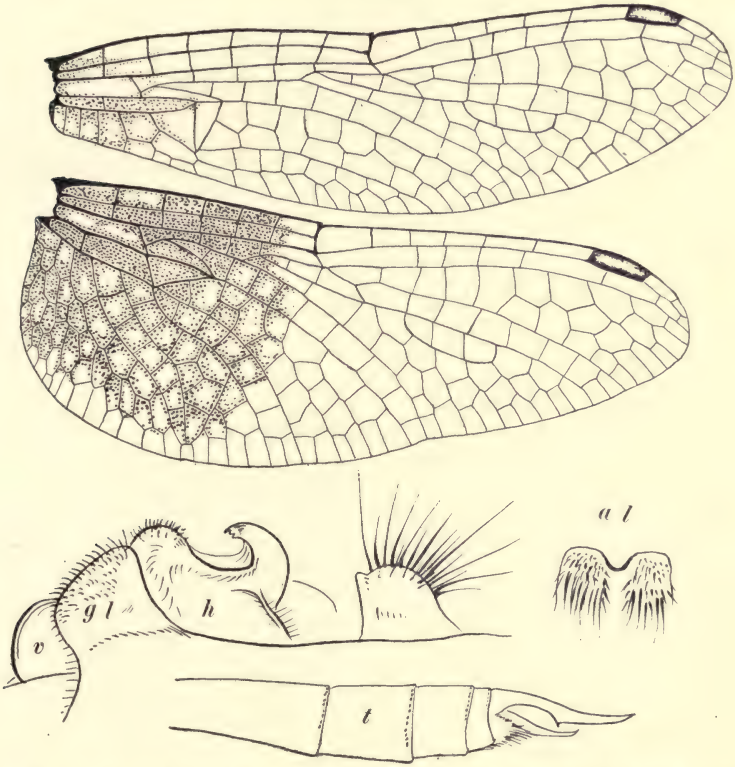

FIG. 1.—Wings and appendages of *Edonis helena*. *a l*, anterior lamina viewed from below; *h*, hamule, in situ, viewed from the side; *g l*, genital lobe; *v*, vesicle; *t*, terminal segments of the abdomen.

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PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

SOME NEW HOMOPTERA FROM THE SOUTH AND SOUTHWEST.

BY ELMER D. BALL.

In working over material for the Biologia the author has been constantly handicapped by our lack of knowledge of the forms occurring in the extreme South and Southwest. Through the activity of two exceptional collectors, Mrs. Annie Trumbull Slosson, in Florida, and Prof. F. H. Snow, in Arizona, our knowledge of the fauna of these regions is being greatly increased. Some of the interesting material they have gathered has been worked out and is described below.

Œcleus snowi sp. nov.

Form much as in *lineatus* but slightly larger, lighter colored and with a shorter vertex. Resembling *fulvidorsum* but much larger and with a narrower vertex. Length, 7.5 mm.

Vertex very narrow, as in *lineatus* but shorter, extending scarcely its own width in front of the eyes, nearly parallel throughout; front narrow above, regularly widened to the antennae and then narrowing more slowly on to the clypeus, a faint median carina. In profile the front is very slightly convex to the middle of the eye, above which it bends back to a slightly obtuse angle with the vertex. Pronotum broadly and shallowly emarginate behind, scarcely longer in the middle than the width of the vertex. Scutellum large with three distinct carinae and two others faintly indicated. Elytra very broad, a distinct slightly reflexed margin outside the costal nervure at the base.

Color bright straw color, eyes darker, ocelli rufous, scutellum testaceous, carinae pale. Elytra subhyaline, veins closely beset with setigerous black dots. Stigma small, smoky, with setigerous punctures on inner margin.

Described from four females labeled "Bill Williams Fork, Ariz., F. H. Snow," and received from Prof. Snow with a number of other fine Homoptera from this same region.

Scolopsella gen. nov.

Type—S. reticulata Ball.

Resembling *Scolops* but more elongate; cephalic process stouter and slightly apically enlarged. Dorsal and lateral carinae irregular; lateral carinae of the inner tablet of pronotum forked. Elytra long, slender, coarsely reticulate, anal area of corium obliquely emarginate.

In general characters this is no doubt a Dictyopharid genus but in the venation and slope of the elytra it suggests *Cyrpoptus* of the Fulgorids.

Scolopsella reticulata sp. nov.

Resembling a macropterous specimen of *Scolops* but with still longer elytra and a broader, more sculptured cephalic protuberance. Length, 17 mm.; length of horn, 4 mm.

Vertex and front extending into a long stout horn as wide as the vertex until just before the apex when it widens out into a slightly upturned, spoon-shaped lobe. Lateral carinae of vertex and front extending along the horn where they are irregularly crenated and curved. Inner carinae of front continuing straight and simple and forming the margin of the apex. Pronotum nearly truncate posteriorly, central table widening posteriorly, tricarinate, the lateral carinae indented before the middle and forking, the outer fork extending down onto the sloping lateral tablet. Scutellum with a distinct median carina a pair of feeble divergent lateral ones near posterior margin. Elytra long and very narrow, venation as in a *Scolops*, at the base the veins often abruptly forking and continuing almost parallel everywhere even on clavus. The veins are tied together by numerous irregular reticulations. Inner margin of corium slightly concavely excavated.

Described from a single specimen received from Prof. F. H. Snow and collected by him at Congress Junction, Ariz., in July. This is such a unique and readily recognizable form that it seems best to describe it from a single specimen and thus make it available to other workers.

Megamelanus elongatus sp. nov.

Much longer and narrower in general appearance than *bicolor*, superficially resembling a *Kelisia* with a long pointed vertex. Vertex much longer than in *bicolor*. Length, 3.7 mm.

Vertex rather broad at base, portion between eyes about square, face and vertex extending in front of eyes as an acutely pointed pyramid longer than the long diameter of the eye; all carinae sharp and distinct, a trace of a single median carinae on posterior half of vertex. Pronotum long, tricarinate, the outer carinae parallel and continuing to posterior margin. Scutellum tricarinate, the carinae parallel and closer together than on the pronotum. Elytra long, narrow, venation simple regular.

Color dirty straw, face smoky, the lateral carinae often margined internally with fuscous. Apex of elytra often margined with fuscous. All veins thickly studded with curved dark hairs.

Described from two females and three males from Mrs. Annie T. Slosson, collected at Biscayne Bay, Fla. This is a strikingly distinct form, the long acutely pointed head at once separating it from any of its relatives.

Megamelanus rufivittatus sp. nov.

Resembling *elongatus* but with a shorter head and longer elytra. Pale green with a pair of red stripes the entire length of the body. Length, 4.7 mm.

Vertex narrow at base, coming to an acute angle at apex which is slightly sloping, carinae sharp, uniting just in front of eyes into a single one which runs over the apex. Front narrow, parallel-margined, slightly concave in profile, forming an acute angle in front of the middle of the eye. Pronotum short, slightly angularly emarginate posteriorly, carinae divergent. Elytra twice the length of the body, the apical cells very long.

Color pale green ; antennae with a black line in front ; a pair of broad red stripes originate on each side of the apex of vertex, omitting the eyes and continue outside the carinae of the pronotum and scutellum to the last abdominal segment.

Described from a single male from Thompsonville, Ga., collected by Mr. Hebard and sent by Mrs. Slosson.

Acutalis inornata sp. nov.

Form much as in *semicrema* but slightly smaller. Of a uniform bright grass green with pale elytra. Length, 4 to 4.25 mm.; width, 1.8 mm.

Form of pronotum as in *tartarea*, sloping back from head to an almost flat dorsum, Head convex, pale green. Pronotum bright grass green sometimes fading to a yellowish green in dried specimens. Elytra milky white, veins concolorous, obscure ; the outer longitudinal vein distant from the middle one at apex, oftentimes approaching the base of apical cell. Apical cell large and with the base more angulate than in *semicrema*.

Described from six specimens, all from Biscayne Bay, Fla., collected by Mrs. Slosson. This species was thought first to be an immature color condition of *semicrema* but upon examination of more specimens the venation proved to be quite distinctive and the series is constant in structure and color.

Deltocephalus slossoni sp. nov.

Form and general color pattern nearly like *grammicus*. The elytra obliquely truncate at apex. Color pale straw and fuscous. Length, 4.25 mm.

Vertex acutely pointed, the apex blunt, three-fourths as wide at base as its middle length, half longer on middle than against eye, half longer than pronotum. Vertex and front acutely angled. Elytra not quite as long as the body, obliquely truncate at the apex, the outer angles slightly produced. Venation similar to *reflexus*, obscure on the disc, the anteapical cells very short.

Color pale creamy yellow, vertex, pronotum and scutellum marked as in *albidus*, the six stripes continuing onto the elytra, the inner pair parallel, the outer pairs converging and meeting the inner pair at apex of clavus. On the corium most of the veins are light, narrowly margined with fuscous, the reflexed veins broadly light, narrowly margined anteriorly with fuscous, the enclosed cells tinged with tawny. Pygofers with two stripes above and a pair of spots on the sides. Face pale; the upper half, a large round spot on clypeus and a dot at the outer corner of each lore black. The black above breaks up into about five stripes which, with the exception of the upper one, do not meet in the middle.

Genitalia: Female segment very long, posterior margin divided into three nearly equal parts by two cuts extending half way to the base, the outer lobes slightly obliquely rounding away from the inner one; inner one slightly longer than the others, but little narrowed before the bluntly rounding tip. The tip is black and has an acute median notch.

Described from one female collected at Biscayne Bay, Fla., by Mrs. Slosson. This is but one of the many fine things that have been received from this same source and the name is but a slight recognition of the debt that workers in Homoptera owe her for her assistance in connecting up the fauna of this country with that of the more tropical regions. It is such a distinct and easily recognized species that there can be no question of determination though founded on a single specimen.

Deltocephalus littoralis sp. nov.

Closely resembling *collinus* in general appearance but slightly longer, with a broader vertex and a much wider front. Pale green. Length of female, 4.45 mm.; male, 3.5 mm.

Vertex broad, slightly concave in the center, about right-angled in front; twice longer on middle than against eye. Vertex and front meeting in an acute angle, the margin slightly rounded. Front very broad and full, almost parallel margined and then suddenly rounding to the clypeus. Elytra shorter than the abdomen in the female, longer in the male. Venation rather weak, resembling that of *melsheimeri* but with a double cross-nervure between the sectors at the base.

Color pale green, vertex and pronotum sometimes almost straw color, ocelli black, front brown with light arcs and a light median line.

Genitalia: Female segment long, lateral margins short, then convexly rounding to a long triangular point on the posterior margin. Just before the apex the point is abruptly narrowed into a semi-circular tooth. From behind the lateral margins there projects a pair of strap-like membranes with rounding tips. Pygofers long and narrow, somewhat exceeded by the ovipositor. Male valve small, semi-circular; plates together acutely triangular, three times as long as the valve, the lateral margins slightly concave, a pair of dark spots near the base.

Described from four specimens taken at Cape May and Anglesea, N. J., August 19–23, 1902, by Mr. E. P. Van Duzee.

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PROCEEDINGS

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NOTES ON THE NAMES OF CERTAIN NORTH AMERICAN BIRDS.

BY E. W. NELSON.

During my recent study of the Mexican birds in the collection of the Biological Survey, some facts have come to light which appear to necessitate changes in the nomenclature of several species.

I am indebted to Dr. Chas. W. Richmond of the National Museum for calling my attention to the literature in some of the cases mentioned below, and to Mr. J. H. Riley of the National Museum for his courtesy in helping me with the comparisons of the turkey buzzards. Acknowledgments are also due Mr. Witmer Stone of the Philadelphia Academy of Natural Sciences, and Mr. Outram Bangs of the Museum of Comparative Zoology for the loan of material.

SULA LEUCOGASTRA Boddaert.

In the original description of *Pelecanus sula* (Syst. Nat. ed. 12, I, p. 218, 1766) Linnæus characterizes it as less than half the size of *bassana*, with the body white, the outer part of the primaries and secondaries black, and the face and feet red.

This description in no way fits the bird recognized by most later authors under the name of *Sula sula*, which has the head, neck and upperparts (including the tail) dark sooty brown ;

the underparts white, and the feet green. The references given by Linnæus with the original description, however, belong mainly to this last mentioned bird. Gmelin followed in 1788 with a composite description under *Pelecanus sula* in which he includes Linnæus' statement that the body is white and contradictory matter of his own, stating that the species is dark brown with the underside of the body white.

The bird with the dark brown upperparts and white lowerparts was first named in 1783 by Boddaert, who called it *Sula leucogastra* (Tabl. Plan. Enl. p. 57). Since then authors have usually treated *leucogastra* as a synonym of *sula*. This may have originated from the error of Gmelin in confusing the two species and perhaps even more probably from the references given by Linnæus which do not belong under the bird he describes. In any case, when the application of an author's description is obvious it is necessary to accept it and not his references to fix the name. In this case it appears that the specific name *sula* should become a synonym of *piscator*, and *Sula leucogastra* Boddaert be used for the species which has so long gone under the name *Sula sula*.

ACCIPITER VELOX PACIFICUS (Lesson).

In 1888 Mr. Ridgway described the western sharp-shinned hawk as *Accipiter velox rufilatus* (Proc. U. S. Nat. Mus., XI, p. 92) taking as the type a specimen from Fort Bridger, Wyoming. In 1845, however, Lesson gives a good description of the male western sharp-shinned hawk from specimens taken at Acapulco, Guerrero, Mexico, and California, under the name *Nisus pacificus* (Echo du Monde Savant, June 19, 1845, Col. 1086) so that the western sharp-shinned hawk, if a recognizable form, becomes *Accipiter velox pacificus* (Lesson). This bird occurs only as a winter visitor to Acapulco for which reason the birds of California may be taken as typical of this form.

CATHARTES AURA (Linnæus).

The common turkey buzzard of North America was named by Linnæus in the 10th Edition of his Systema Naturæ (p. 86, 1758). He called it *Vultur aura* and mentioned only a single character, the white bill, that is particularly diagnostic of the bird to which the name is commonly applied. In the 12th edition of the Systema however, the feet are said to be flesh colored and the head red. These additions definitely fix the name. This becomes of importance, since two distinct birds are included in the references cited by Linnæus. Of these *Urubu brasiliensibus* Marcgrave appears to be the small yellowheaded buzzard since named *Œnops pernigra* by Sharpe (Cat. Birds Brit. Mus. I, p. 26, 1874).

The remaining principal references are four, two of which are from the West Indies, one from Mexico, and the other from the southeastern United States. In the Mexican reference the common name *aura* is quoted from Hernandez—this evidently is the source of the name used by Linnæus, and it is of interest to find that *aura* is still the common name of this vulture throughout Mexico. In 1839 Wied in the account of his trip from Rockport, Indiana, to Owensboro, Kentucky, calls attention to the differences between the vultures of this group in Brazil and those of North America (Reise in das Innere Nord-America I. p. 162, footnote, 1839). He considers that the Brazilian bird is the true *Cathartes aura*, and gives to the birds of North America the provisional name of *Cathartes septentrionalis*. In these notes Wied describes a pair of North American birds in considerable detail, but does not specify any definite locality for them. Fortunately he published a later and more elaborate paper upon the same subject (Journal für Ornithologie 1856, p. 119), and again describes a pair of North American birds which were taken on the Wabash River near New Harmony, Indiana, where he stayed for some time while visiting Thomas Say. As the measurements are identical in both of these descriptions it becomes evident that these birds were the types of *Cathartes septentrionalis*, and enables us to fix the type locality. The name *Vultur aura* of Linnæus as originally used applied to all the redheaded vultures of the United States, Mexico, and the West Indies. Recent collections from Mexico and the West Indies show that the birds of these regions are very much smaller than those of the northern United States. The series available for comparison shows that the extremes of the two forms are connected by regular gradation through the intervening territory. These differences between the birds of the two regions appear to be great enough to necessitate the recognition of two geographic forms. This being the case, we have *Cathartes aura septentrionalis* (Wied) for the large northern form ranging from the British possessions throughout the United States to northern Mexico. The original name is restricted to the small bird of Mexico, Central America, and the West Indies. The southern form may be considered typical in the State of Vera Cruz, Mexico, which is the region where it was found by Hernandez, upon whose account Linnæus largely based his original description.

The Vera Cruz bird was again named in 1845 when Cassin described *Cathartes burrovianus* from a specimen collected near the city of Vera Cruz (Proc. Acad. Nat. Sci. Philadelphia, 1845, p. 212). This name has given rise to some difference of opinion among ornithologists. By some it has properly been considered as a small *Cathartes aura*. Others have treated it as a distinct species. Fortunately Cassin's type is extant and through the courtesy of Mr. Witmer Stone of the Academy of Natural Sciences of Philadelphia I have recently had the opportunity to examine it.

A careful comparison of this type with a considerable series of birds from the United States, Cuba, the Isle of Pines and various parts of Mexico makes it evident that it is a typical specimen of the small turkey buzzard which occurs throughout southern Mexico, Central America and the West Indies. It is in nearly fresh black plumage but the upper side of the shafts of the primaries are bleached old ivory white to within two or three inches of the tips. The opening through the nostrils has been distorted at the anterior end by a cord used to tie together the mandibles of the fresh bird. This distortion of the nostril from the same cause is shown in a number of other specimens examined. The type of *burrovianus* is a mounted bird with the skin of the back of the neck distorted in such a way as to carry the feathering higher up on the nape than normal and thus furnish one of the supposed characters of the species.

Birds from Vera Cruz, Cuba, and the Isle of Pines are about the same in size but the island birds have heavier bills. The Jamaica bird is even smaller than the one in Cuba.

Birds from northern Mexico, including Lower California and the entire southern border of the United States, are distinctly larger than those from Vera Cruz and Cuba and there appears to be a constant increase in size to the northern part of the birds' range.

The typical form of *Cathartes aura* differs from the northern bird in smaller size ; narrower and less well marked brown borders to the feathers of the back (the brown border sometimes entirely lacking). The color of the upper side of the shafts of the primaries (brown when freshly moulted) soon bleaches to an old ivory, or yellowish white.

Cathartes aura septentrionalis differs from the typical form in larger size ; more pronounced brown borders to the feathers of the upperparts, and the upper side of the shafts of the primaries usually remain permanently dusky brown.

The following measurements give an idea of the differences in size between the two forms.

Cathartes aura :

Male (?), near city of Vera Cruz, Mexico. (Type of *C. burrovianus*). Wing, 475 ; tail, 215 ; tarsus, 62.

Female, Southern Vera Cruz (April 7, 1901, Bangs Coll.). Wing, 475 ; tail, 233 ; tarsus, 63.

Cathartes aura septentrionalis :

Male, Washington, D. C. (Dec. 25.) Wing, 553 ; tail, 320 ; tarsus, 74.5.

Male, Mt. Carmel, Ill. (Aug. 1.) Wing, 550 ; tail, 320 ; tarsus, 67.

TANGAVIUS INVOLUCRATUS Lesson.

In the Revue Zoologique for February, 1839, p. 41, Lesson describes *Tangavius involucratus* from a Mexican specimen in the Abeille Collection as follows : "*T. corpore nigro æneoque ; alis, et cauda atrocærulescente splendentibus ; colli plumis, amplis, dilatate involucrum formantibus.*" This description evidently applies to a form of *Callothrus*, and since numerous other new birds described from the Abeille Collection about the same time were from eastern Mexico it is fair to infer that the present species came from the same region. Both generic and specific names appear to be used for the first time in the place quoted above ; *Callothrus* of Cassin, 1866, is thus antedated by *Tangavius* of Lesson, 1839, and *involucratus* replaces *robustus* for the name of the bird of eastern Mexico.

The birds of this genus in western Mexico have hitherto been considered specifically distinct from those of eastern Mexico but the series in the Biological Survey Collection show that about the Isthmus of Tehuantepec and southward intergradation takes place so that a rearrangement of the Mexican forms becomes necessary. The South American species becomes *Tangavius armenti* (Cabanis) and the Mexican species should stand as follows:

Tangavius æneus æneus (Wagler) Western Mexico.
" " *assimilis* (Nelson) Southwestern Mexico.
" " *involucratus* (Lesson) Eastern Mexico.

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PROCEEDINGS

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NEW SPECIES OF PARASITIC COPEPODS FROM THE MASSACHUSETTS COAST.

BY CHARLES BRANCH WILSON.

By Permission of the Secretary of the Smithsonian Institution.

It is desirable that the following new species of parasitic copepods be included in the list of Crustacea about to be published by the Boston Society of Natural History, since they are very common along the Massachusetts coast.

For this reason a brief preliminary description is herewith presented, to be followed in the near future by a more detailed account, accompanied by suitable drawings.

Gloiopotes ornatus sp. nov.

Type from Woods Holl, Massachusetts. No. 6209 U. S. National Museum.

Female.—Carapace elliptical; frontal plates well defined; no lunules. Posterior sinuses large and well rounded; median lobe less than half the entire width, not projecting behind the lateral lobes, its posterior margin concave. Thoracic area very large and oblong, divided by secondary grooves into quarters, each variously ornamented by elevations and depressions of the surface. There are also small spines along either side of the median lobe, while the outer margin of the lateral lobe is ornamented with a row of long wavy hairs, which extend forward about to the center of the carapace. Free segment short and wide, covered dorsally by two broad plates which extend out over the basal joints of the fourth legs. Genital segment horseshoe shaped, about half as wide as the carapace, and prolonged backward in a curved lobe on either side of the abdomen. This segment carries spines on its dorsal surface and lateral margins. On the outer margin also, at about the center of the posterior lobe, is fastened a triangular projection, nearly as long as the lobe itself and toothed on its inner margin. Abdomen cylindrical and two-jointed; basal joint wider than terminal and about half as long; terminal joint with spherical swelling at its center, ornamented dorsally and laterally with spines.

This species differs from the two already described in the genus (*G. hygomianus*, Stp. & Ltk. and *G. huttoni*, Thompson) chiefly in the size and shape of the dorsal plates on the free segment, in the grooving on the dorsal surface of the carapace, in the fringe of long hairs on the lateral margin of the carapace, and in minor details of the appendages, especially the first maxillae and furca. The first maxillae are three-parted, the outer prong broad and spatulate, the two inner ones shorter and acute. The furca has bifid branches, the outer ones extending nearly at right angles to the base of the central sinus, the inner ones slightly divergent, with a broad U-shaped sinus between them. Color a uniform yellowish gray, somewhat darker where the surface is raised in ornamentation.

Total length, 11 mm.; width, 4.6 mm.

Outside surface of swordfish.

(*ornatus*, ornamented.)

Alebion gracile sp. nov.

Type from Vineyard Sound, Massachusetts. No. 8122 U. S. National Museum.

Female.—Carapace elliptical, projecting somewhat at the center. Posterior sinuses broad, somewhat enlarged at the base and dividing the carapace into nearly even thirds. Both median and lateral lobes squarely truncated. Free segment nearly as wide as genital segment and carrying a pair of dorsal plates whose outer margins are strongly convex. Genital segment a little more than half as wide as the carapace, widest at the center and prolonged posteriorly on either side into a stout conical spine which reaches beyond the tips of the anal laminae. Abdomen two-jointed; first joint larger than second, and extending backward on either side of the latter in a blunt conical projection similar to those on the genital segment. The terminal segment is strongly constricted at its base and is only about half the width of the basal segment. Anal papillae large, nearly as long as the terminal segment, and curved in toward each other at the tip.

Of the appendages, the first maxillae are reduced to mere semicircular plates attached flatly to the ventral surface of the carapace, while the second pair are also flat laminae but considerably larger. The exopods of the first three pairs of swimming legs carry the stout corneous claws peculiar to this genus, and the fourth pair are so rudimentary as to be invisible in dorsal view. The fifth pair is entirely lacking.

Male.—The most noticeable difference between the male and female is in the proportion of the different body regions. The carapace is orbicular rather than elliptical while the rest of the body is strongly narrowed, making the contrast between the two very striking. The free segment lacks the plates on its dorsal surface but carries on either side a rounded protuberance which represents the rudiments of a plate. The genital segment is small and spindle-shaped without a trace of the posterior spines found in the female. The fifth legs are plainly visible on the ventral surface of this segment. The abdomen is very narrow and made up of two spindle-shaped segments of about the same size; the anal papillae are like those in the female. The second antennae are much larger and stronger than in the opposite sex, the terminal claws are branched like a stag's horn and are evidently used for clasping organs. The other appendages are like those of the female with the exception of the second swimming legs which have a long conical sexual appendage in place of the large claws of the female.

Total length of female, 10 mm.; width of carapace, 4.9 mm. Total length of male, 6 mm.; width of carapace, 3.2 mm. The entire animal is a clear horn color like the finger nails, so transparent as to be invisible on the fish's body.

This species is very common on the outside surface of the smooth dogfish, almost every fish yielding one or more specimens.

(*gracilis*, graceful, slender.)

Alebion glabrum sp. nov.

Type from Woods Holl, Massachusetts. No. 8123 U. S. National Museum.

Female.—Carapace orbicular, squarely truncated posteriorly. Frontal plates well defined. Posterior sinuses broad and deeper than in *gracilis*, the lateral lobes relatively wider and rounded instead of truncate posteriorly. Free segment narrow and carrying a pair of dorsal plates which are nearly circular in outline, in strong contrast to those of *gracilis.* Genital segment half the width of the carapace, oblong in shape, with nearly parallel sides and smooth rounded angles. The entire surface and the margins of this segment are smooth without a trace of the fringe of spines to be found in other species. The abdomen is two-jointed, the joints about the same size. On either side of the first joint a semicircular wing or thin fold of integument projects laterally from the dorsal surface, the combined width of joint and wings being half that of the genital segment. Terminal segment slightly spindle-shaped and tipped with small anal papillae.

The egg-strings are wider and longer than those in *gracilis*, being once and a half the length of the body. The appendages present many differences in detail which are of minor value, the chief distinction of the species lying in the relative size and shape of the body regions.

Male.—Carapace distinctly longer than wide and obovate, with the widest portion very far back. Posterior sinuses triangular and flaring widely. Free segment long and narrow, less than half the width of the genital segment, and without a trace of the dorsal plates. Genital segment narrow and spindle-shaped, squarely truncated posteriorly with a small spine at each posterior corner. The fifth legs are plainly visible on the lateral margins of this segment near its center. Abdomen made up of two nearly equal segments without the wings which appear in the female. Anal laminae very much larger than in the female and armed with long and slender setae.

Total length of female, 12 mm.; width of carapace, 5.9 mm. Total length of male, 7.6 mm.; width of carapace, 3.1 mm. A grayish horn color, nearly uniform throughout; not quite as transparent as in *gracilis*. Very common on the outside surface of the sand shark, and also frequently found on the smooth dog-fish in company with the preceding species.

(*glabrum*, smooth.)

Nesippus alatus sp. nov.

Type from Buzzards Bay, Massachusetts.*

Female.—Carapace transversely elliptical, the width once and three-quarters the length. Frontal plates distinct and, with a portion of the cephalic area, projecting in a half circle from the anterior margin. Posterior lobes short and wide; thoracic area quadrilateral and raised a little above the rest of the dorsal surface. Eye distinctly tripartite. Only the first thoracic segment fused with the head, the others free. Second and third segments fused inter se and carrying a single rectangular plate on either side. Fourth segment free, considerably narrower than the first two and covered dorsally with a pair of fused plates. These plates are much larger than in other species, circular in outline, and they overlap the genital segment for some little distance. Genital segment elliptical with evenly rounded outlines, the length to the breadth in the proportion of 8 to 5. Abdomen very small, triangular in shape, and attached about its own length in front of the posterior margin of the genital segment, on the ventral surface of the latter. It is thus invisible in dorsal view, but the two large anal laminae show up for their entire size. The appendages closely resemble those in *N. orientalis* Heller, and *N. crypturus* Heller, with an impartial distribution of the similarity. Thus the first antennae are like those in both species; the second pair show most resemblance to those of *orientalis;* the second maxillae are like those of *crypturus;* the first maxillipeds like *orientalis*, the second pair most like *crypturus*. But in the present species the second maxillipeds are much more massive than any heretofore described and approach closely the condition seen in *Pandarus*. There are also sucking disks or pads at the base of both pairs of antennae very similar to those in *Pandarus*.

Male.—Carapace semi-elliptical, a trifle wider than long, squarely truncated posteriorly, with a long and narrow lobe at each of the posterior corners. Free thoracic segments of about the same length but diminishing regularly in width, none of them fused and none carrying dorsal plates. Genital segment small, a little narrower than the preceding segment and of about the same length and width, with reëntrant corners. Abdomen very short, the basal joint scarcely visible beneath the posterior border of the genital segment; anal laminae no larger than in the female but with much longer setae.

Total length of female, 7 mm.; width of carapace, 3.8 mm. Total length of male, 4.55 mm.; width of carapace, 2.3 mm.

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*The types of this species and the next will be eventually placed in the U. S. National Museum.

Color of female a light yellowish white, fairly transparent, the egg-strings almost pure white. The male is darker in color and usually becomes brown in preservatives.

The females of this species are found upon the gill arches of the common sand-shark, rarely on the floor or roof of the mouth. The male is found on the outside surface of the body in company with both sexes of the preceding species. It can not be regarded as abundant since it is rare to find more than one female on the same fish, but it is fairly common.

(*alatus*, furnished with wings.)

Eudactylina nigra sp. nov.

Type from Buzzards Bay, Massachusetts.

Female.—Body elongated, largest at the anterior end and tapering regularly to a blunt point at the posterior end. The six free thoracic segments diminish regularly in width but are of very different lengths, the first one being the shortest, and the fifth one the longest. The carapace covers the head and projects more or less over the first free segment, sometimes nearly hiding it in dorsal view. It is of about the same length and width, with rounded corners and a deeply emarginate posterior border; the sides also are often more or less emarginate.

The first antennae are very prominent at the anterior margin, and their basal joints appear like the frontal plates in the *Caligidae*. Both pairs of maxillipeds project beyond the lateral margin of the carapace and stand out prominently in a dorsal view. Each of the first four thorax segments carries a pair of biramous swimming legs; on the last two segments the legs are rudimentary and consist of a basal joint only, without rami. On the sixth segment they can be seen plainly only on immature females and apparently disappear in the adult.

The egg-sacks are attached to the sides of the sixth (genital) segment; each is fully as wide as the genital segment, considerably more than half as long as the entire body, and contains from eight to twelve eggs. The abdomen is very small and two-jointed, with minute anal laminae. Of the appendages, the second maxillae differ from those in other species by being much longer and more slender, and are plumose for their entire length. The second maxillipeds also are larger than in any described species, and stand out more prominently in dorsal view. These two particulars will at once distinguish the present species from all others.

Total length, 2.4 mm.; length of carapace, 0.5 mm.; width of carapace, 0.4 mm.; length of egg-strings, 1.3 mm.

General color a dark brown or black, the brown shade due to the two long and irregular ovaries, the black to the contents of the intestine. The eggs are very large and also dark brown in color, so that the living copepod shows well against the red background of the gills.

This species is found abundantly on the gills of the sand shark, being firmly fastened by its second maxillipeds to the gill filaments. Many hundreds may often be secured from a single shark.

(*nigra*, black.)

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PROCEEDINGS

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A NEW FLYING SQUIRREL FROM THE COAST OF ALASKA.

BY WILFRED H. OSGOOD.

Nearly all the resident birds and mammals of the coast region of southeastern Alaska belong to peculiar forms characterized by dark intensified colors. Among the few mammals that have thus far escaped description is the flying squirrel. It has been long known to occur there but, until recently, specimens have not reached any of our museums.

Some two years ago, while working in the region, I commissioned a trapper to secure specimens of flying squirrels for the Biological Survey and gave him instructions in preparing skins. As a result, a series of six well-prepared specimens have been recently received. These, as was expected, are quite different from any of the previously described forms. For the privilege of describing the new form I am indebted to Dr. C. Hart Merriam.

Sciuropterus alpinus zaphæus subsp. nov.

Type from Helm Bay, Cleveland Peninsula, southeastern Alaska. ♀ ad. No. 136,137 U. S. National Museum, Biological Survey Collection. January 21, 1905. Cyrus Catt.

General characters.—Most similar to *Sciuropterus alpinus;* color much darker throughout; tail, sides of belly, orbital region, forearm, and upper sides of feet much more dusky.

Color.—Type: Upperparts from occiput to base of tail pale russet, between russet and wood brown; sides of head gray and dusky; the dusky, which is practically black, forms a line from the base of whiskers to and around the eye and thence becomes plumbeous gray to the posterior base of the ear; lower cheeks mixed whitish gray and dusky; lateral line black with scarcely any suggestion of brownish tinge; concealed hairs of under side of lateral line pure creamy white; upper side of forearm deep blackish brown continuous with and but slightly paler than lateral line; sides of throat grayish lightly mixed with dusky, becoming creamy buff in axillary region; a blackish spot just below lower lip; throat whitish, becoming creamy posteriorly; breast creamy buff faintly tinged with dusky, same color continuous down middle of belly; sides of belly and thence down under side of hind legs pale creamy heavily mixed with dusky producing a buffy gray effect; a small whitish area just in front of anal region; anal region pale russet mixed with dusky; hairs of upper side of tail bright broccoli brown subterminally, overlaid and nearly obscured by sooty black; under side of tail slightly more rufescent than upper and less heavily overlaid by sooty; under side of tail with an indistinct grayish median line; upper sides of fore and hind feet blackish brown.

Skull.—Practically as in *Sciuropterus alpinus.*

Measurements.—Type: Total length, 311; tail vertebræ, 133; hind foot, 42. Average of 6 adults: Total length, 307 (292–311); tail vertebræ, 144 (133-152); hind foot, 41 (40–42).* Skull of type: Basilar length of Hensel, 32.3; occipito-nasal length, 41.4; zygomatic breadth, 26.2; constriction in front of postorbital processes, 8.3; median length of nasals, 12.8; upper toothrow, 8.2.

Remarks.—This form needs close comparison only with *S. alpinus*, which is represented in the Biological Survey Collection by at least four typical examples, two from Jasper House, Alberta, practically topotypes, and two from Stuart Lake, B. C. The most convenient characters for distinguishing it are the gray cheeks, the sooty feet, almost pure black lateral line, relatively dark forearm, and the heavy mixture of dusky on the sides of the belly. *S. a. fuliginosus*, *S. yukonensis*, and *S. oregonensis* have the underparts either so much paler or so much more rufescent as to require no comparison.

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*Total length and tail measurements are the metric equivalents of inches and fractions taken by the collector; hind foot measurements taken from dry specimen.

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PROCEEDINGS

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DESCRIPTIONS OF APPARENTLY NEW MAMMALS OF THE GENERA *OVIBOS*, *CYNOMYS* AND *MUSTELA*.

BY D. G. ELLIOT, F. R. S. E., Etc.

The specimens described in the present paper have been in the collection of the Field Columbian Museum for a considerable time, some of them indeed for several years. It is regretted that an exact locality can not be given for the new race of the musk-ox, but this, as every collector knows, is practically impossible, when the specimens are obtained from the natives of any country—an approximate locality being all that can be given. Only the trained collector appreciates the importance of recording the exact place at which his specimens were procured.

Ovibos moschatus niphœcus* subsp. nov.

BLACK MUSK-OX.

Type from the region north of Hudson Bay; exact locality unknown. Type No. 1267, Field Columbian Museum.

General characters.—In color intermediate between *O. moschatus* and *O. m. wardi.* Most of the young animals, and some of those in the prime of life, have a narrow white band between the ears back of the horns, but no white on the face. The old bull, which is in worn pelage, has no white hairs anywhere, while the aged cow, presumably his mate (as all the specimens, twelve in number, were stated to have been killed out of the same herd), has a small quantity of white on the face. The color of the legs is different from that of both the other named forms, being grayish white on fore legs, but blackish or black and gray on the hind legs. The curve of the horns is between that of *O. moschatus* and *O. m. wardi*, projecting outward more than in the first, but much less, and closer to the head than in the latter. The skulls exhibit the same intermediate characteristics. Those of *moschatus* and *wardi* in their general characters are nearer to each other than either of them is to that of the present race, which in certain points agrees with both. The nasal bones of *moschatus* are long and much more slender than those of *wardi*, while those of the present race are short and broad for their length, but more nearly resemble those of *moschatus*. The shape of the lacrymal in the new subspecies at once attracts attention, and is quite different from that exhibited by its allies. Forming a portion of the wall of the bony orbit, it is much smaller and less wide than in either of the other forms. In *moschatus* it is a long bone, widening gradually from the posterior end to the anterior, the posterior half slanting backward, and at a greatly lessened angle to the anterior portion. The lacrymal bone of *wardi* is compressed in the middle, the posterior portion standing at a right angle to the anterior, and widening broadly at its forward termination. The lacrymal of the present subspecies, in comparison to those of its relatives is a small bone, in shape nearer that of *moschatus* than of *wardi* and, as in the former, not compressed in the middle to any extent, with the posterior end sloping backward even more than in that of *moschatus*. It resembles therefore the lacrymal of *moschatus* more than it does that of *wardi*, but is conspicuously different in its smaller size. The horn cores slant away from the skull more than do those of *moschatus*, but much less than those of *wardi*. A ridge runs along the malar beneath the orbit and turning downward in front of the orbit extends onto the maxilla continuing onwards in *moschatus* to above the third premolar, in *wardi*, and the present subspecies to above the fourth premolar. In *wardi* this ridge is exceedingly sharp, especially in front of the orbit, in *moschatus* much less so, and in *O. m. niphœcus* it is rounded on top along its entire length. On the under surface of the skulls the paroccipital processes attract the eye by their very different size and shape, those of *moschatus* and *wardi* being broad, heavy, and curving inward at the tip, while those of the new race are slender, erect, and graduating to the narrow tips, thus presenting an altogether different appearance. The bullæ of *wardi* are arcuate in shape, the posterior portion turning outward away from the line of the anterior portion, and are of large size, and but slightly curved on the superior outline. Those of the new form are next in size though not so large as those of *wardi*, only of a slightly arcuate shape, and greatly curved on the superior outline which is sharp. The bullæ of *moschatus* are the smallest of the three. The postglenoid foramen is widely open in *moschatus*, much less so in *niphœcus* and greatly contracted in *wardi;* and the glenoid processes of the three forms are of quite different shapes, being very broad with rounded tips in *moschatus*, much smaller but of similar form in *wardi*, and high and narrow in the new subspecies. The basioccipital of *O. m. niphœcus* narrows rapidly toward its anterior end, being somewhat the shape of an arrowhead divested of its point, while the same bone in the other two forms preserves an equal width for nearly the entire length. The basisphenoid and presphenoid are also narrower in the new form. The foramen ovale, and foramen lacerum anterius are both larger and more widely open than are those in the forms compared, and the foramen rotundum is also larger.

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* ***νὶφα*** snow, and ***οικέω*** to dwell—to dwell amid the snow.

Color.—Type, bull in prime of life. A narrow whitish band between ears, behind the bosses of the horns, and a small brown saddle on middle of back ; rest of head, neck and body, jet black. Fore legs grayish in front, black behind changing into grayish white above the hoofs ; hind legs black in front, becoming gray above hoof ; grayish on sides and hinder part. Long black hairs on body covering the legs to the knees. Nose and lips and chin grayish white ; ears black.

The young bull, female, and calves resemble the type in their jet black hue and in the varying color of the legs. The old bull is of a dark brown hue becoming black upon the flanks, but no white whatever showing anywhere. The old cow is of the same general color as the aged bull, but has a little white upon the sides of the nose.

Measurements.—Skull : Total length, 430 ; occipito-nasal length, 355 ; greatest breadth across orbits, 245 ; median length of nasals, 121 ; greatest width posteriorly, 64; anterior width (at tips), 13 ; zygomatic width, 168 ; palatal arch to end of premaxillæ, 249 ; greatest width of palatal floor between fourth premolars, 76; length of horn core from edge on top of head to tip, 230; length of upper tooth row, alveolar border outer side, 140 ; posterior width of basioccipital, 62 ; anterior width in front of bullæ, 32 ; length of mandible, 345 ; length of lower tooth row, alveolar border outer side, 145.

Remarks.—Comparison of skulls has been made between specimens of *O. moschatus* from north of Great Slave Lake and one of *O. m. wardi* brought from Bache Peninsula, west side of Kane Basin, by Commander Peary, kindly loaned to me by Dr. J. A. Allen of the New York Museum. These with the skulls of *O. m. niphœcus* were from bulls of about the same age.

Shortly after my return from the expedition into Africa in 1896, I received information that twelve specimens of musk-ox had arrived at New Bedford, Mass., and I at once sent the Taxidermist of the Museum to see them and report upon their condition. The report being favorable, the twelve were purchased and brought to the Museum. The account given of these individuals by Mr. Luce of Thomas Luce & Co. of New Bedford, was, that on a previous voyage of one of their whaling ships, the firm, having decided to try to obtain some musk-oxen, directed the captain to make arrangements with the Eskimos for their capture, and ammunition and supplies for the hunt were provided. This was done, and on the next trip, carrying the necessary desiderata, the ship was met at a point on the coast (the exact locality unknown to me) by the Eskimos, who, on receiving the supplies, departed for the interior, agreeing to meet the ship at the same place on its return south in the autumn, with such skins as they might have been successful enough to secure. On the ship's arrival in the autumn the Eskimos were at the place appointed with the skins of twelve musk-oxen, four polar bears and some seals (the last probably captured near the coast, before the ship arrived), all of which were secured for the Field Columbian Museum. The skins of the oxen were frozen and the heads and legs had never been skinned, and this process had to be performed after their arrival at the Museum. This, perhaps, was fortunate, as no mistake could be made in keeping the right skull and skin together.

It was recognized that they were a queer looking lot, like *O. moschatus* and yet unlike, but, for lack of proper material to compare with them and a conservative unwillingness to unnecessarily increase the number of species, they were considered simply as the ordinary musk-ox, until more evidence to the contrary was available. A few years after, Mr. Lydekker described a new form from Greenland as *O. m. wardi*, but on comparing his description with the Museum specimens it was found to disagree with them in various ways. At length Dr. Allen received examples of *O. m. wardi* collected by Peary, and in the mean time the Field Museum had secured five adult specimens of the real *O. moschatus*, obtained 160 miles north of Fort Resolution, Great Slave Lake, and the opportunity of comparing the eastern and western forms with these undetermined specimens had at length, after long waiting, arrived.

While great numbers of the skins of musk-oxen have been received from the Arctic regions every year, comparatively few have found their way into the collections of museums. The chief reason for this is that they come as flat skins suitable for carriage robes or to be made into rugs, and usually without head or skull. And sometimes when these are brought with the skin, the locality where the animal was killed is unknown and the specimen's specific value is consequently non-existent, or seriously impaired. Fortunately the locality of the specimens in the Museum collection are fairly well known, for all were obtained by parties sent out expressly to obtain the animals and preserve them for museum exhibits, and while the *exact* location where the Eskimos procured the specimens of *O. m. niphœcus* can not be given, we know from their statement that they, the natives, went about 600 miles inland from where they met the ships, to the northward of Hudson Bay.

The new subspecies is the intermediate of the two forms previously described, agreeing with either one or the other in certain particulars and differing from both in others. The jet black pelage is very striking when placed beside the brown animals of the other forms and makes them conspicuously different, while the narrow, whitish band on top of the head exhibits a leaning toward *wardi*, but the dark legs again give an affinity to *moschatus*. The shape of the horns is a compromise between the two, more spreading and farther from the head than those of *moschatus*, but less wide and more confined to the head than those of *wardi*. The differences exhibited by the skulls have been already mentioned, and it would appear that the characters there described and the jet black pelage sufficiently indicate this animal's claims to a distinct subspecific rank.

The brown pelage of the old bull and cow may be the result of age, for it can not be deemed seasonal as all the specimens were obtained at the same time, and if it represented the summer coat, the others, we naturally would assume, would be brown also. The total absence of all white hairs from the old bull is singular, as he is the only one without them.

Seven specimens of this new subspecies are mounted and arranged in a group in the west court of the Museum.

Cynomys pyrrotrichus* sp. nov.

RED PRAIRIE DOG.

Type from White Horse Spring, Oklahoma Territory. Type No. 6863, Field Columbian Museum.

General characters.—General color cinnamon rufous, altogether different from that of *C. ludovicianus.* Skull compared with that of above-named species has a narrower palate and larger bullæ; and with *arizonensis* has a broader braincase and wider nasals.

Color.—Head, upper parts of body and sides cinnamon rufous, darkest on head and dorsal region, each hair tipped with whitish, most conspicuous on sides of rump and flanks; underparts and inner side of legs pale yellowish washed or tinged with rufous on chest and abdomen, grading on sides into the color of the flanks; upper parts of fore legs and feet pale vinaceous cinnamon; outer side of thighs pale cinnamon rufous; feet pale vinaceous buff; claws black. Tail cinnamon rufous grading to Van Dyke brown at tip.

Measurements.—Total length, 385; tail vertebræ, 70; hind foot, 58. Skull: total length, 63; Hensel, 52; zygomatic width, 45; greatest width of braincase, 25; length of nasals, 21; palatal length, 31.5; length of upper molar series, 13; length of mandible, angle to top of incisors, 18; lower molar series, 16.

Remarks.—In my paper on Oklahoma mammals collected by Mr. Surber, I noticed a great difference in the color of the specimens obtained when compared with those of the other known species of *Cynomys*, those from Oklahoma being very much darker and more reddish. As all Mr. Surber's examples were collected in the spring (April), I supposed the difference of hue might be attributed to a seasonal variation, and called the specimens *ludovicianus.* Having, however, obtained some *C. ludovicianus* taken in April, I find that the same difference in color still exists and that it is not caused by any seasonal change of pelage. The same striking variation in the general hue is exhibited between the present species and other members of the genus *Cynomys*, as exists between *Citellus 13-lineatus* and *C. 13-l. texensis*, with the addition of separate cranial characters.

Mustela boria† sp. nov.

FARTHEST NORTH MARTEN.

Type from the Lower MacKenzie River District, toward Arctic Ocean; exact locality unknown. No. 13,484, Field Columbian Museum.

General characters.—Darkest in color of American martens; tail long, black.

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* *πυῤῥό-τριχος*—with red hair.

† Βὸρειος adj.—from the quarter of the North Wind.

Color.—Sides of head grayish white; nose and top of head light brown and gray mixed; entire body above and below burnt umber, blackish on dorsal region; entire throat beneath blotched with orange; fore and hind legs black; tail black, base of hairs on proximal half burnt umber; ears like body externally, white internally.

Measurements.—Total length, nose to end of hairs of tail, 785; tail to end of hairs, 267; hind foot, 85 (skin). Skull (broken): Zygomatic width, 50; intertemporal width, 16; length of nasals, 15; width of rostrum at canines, 18; palatal length, 41; length of upper tooth row, outer edge of canine to posterior edge of last molar, 30; length of mandible, 51; length of lower tooth row, 36.

Remarks.—About two years ago an order was given to a captain of a whaling vessel to get some marten during his trip to the Arctic Sea, with skulls and everything complete for Museum specimens, and the result was the five examples now in the Museum, procured at the mouth of the MacKenzie, the ship's winter quarters, presumably from the Eskimos. The peculiarity of these marten is their very dark color (even when compared with *M. a. kenaiensis*), and the long black tail. The country between the presumed range of the new form and *M. a. kenaiensis* is occupied by the *M. actuosa* Osgood, a fine series of which is in the Museum collection from the Bering Sea coast of Alaska, and which is totally different from the new form. The exact locality of these specimens is not known, but as they were received at the ship in the winter, it may be considered to be the first wooded district in the vicinity of the MacKenzie, from its mouth as one ascends the stream. It was stated that the examples came from the mouth of the MacKenzie, but as there are no trees there, the type locality is probably farther up the river.

The skull of *M. boria* compared with *M. a. kenaiensis* has a narrower rostrum, more constricted intertemporal region, and wider palate.

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PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

A NEW SPECIES OF CLAPPER RAIL FROM YUCATAN.

BY E. W. NELSON.

During a recent examination of the series of Mexican birds in the Field Columbian Museum I found a single specimen of a new species of clapper rail from the north coast of Yucatan. I am indebted to the courtesy of Mr. C. B. Cory, Curator of Birds in this museum for the opportunity to describe the species. My thanks are also due Mr. Ned Dearborn, Assistant Curator of Birds, for his cordial assistance during my recent examination of the collection in his charge.

Rallus pallidus sp. nov.

YUCATAN RAIL.

Type from Rio Lagartos, Yucatan, Mexico. No. 13,206, ♀ ad. Field Columbian Museum. April 15, 1893. W. W. Brown.

Distribution.—North coast of Yucatan, and probably of Campeche, Mexico.

Specific characters.—Most like *Rallus crepitans waynei* but bill shorter and slenderer; breast and outer side of wings more reddish; streaks of gray and brown on upperparts more strongly contrasted.

Description of type.—Top of head and neck bistre brown; feathers of back, scapulars, tertials, rump and upper tail coverts olivaceous bistre brown, broadly edged with ashy gray producing strongly marked streaks of gray and brown; upper surface of primaries and secondaries nearly Isabella color with a wash of cinnamon; wing coverts decidedly more cinnamon than primaries and sparingly marked with transverse bars of white; upper surface of tail feathers bistre brown edged with hair brown;

lower eyelid and supraloral stripe from base of bill to top of orbit white; lores, sides of head below and back of eyes, down to a little below line of gape, plumbeous with a brownish wash on lores; chin and throat pure white (this area extending up nearly to line of gape but indistinctly suffused with buffy along upper and posterior borders); sides of neck olivaceous bistre brown streaked with grayish and shading through grayish brown into dingy cinnamon washed with dull gray along median line; breast light cinnamon rufous; sides of body and flanks varying from olive brown to dark hair brown strongly marked with transverse white bars; under tail coverts white with narrow shaft streaks of dusky brown.

Measurements.—Wing, 142; tail, 60; culmen, 53; tarsus, 51.

Remarks.—This rail is most like *Rallus crepitans waynei*, especially on the underparts, but the breast and under side of the neck are redder and the dusky bars on the flanks are slightly darker. The upperparts differ more, as the top of the head and neck are lighter brown and the gray and brown streaks on the back are much more strongly contrasted. It is much paler and more brightly colored than *Rallus l. caribæus*; the pure white throat, cinnamon rufous breast and strongly contrasted gray and brown stripes on the back being very distinctive.

From the pale colors of this bird it is probable that it will be found limited to the arid coast region of the peninsula of Yucatan though it may range still farther north along the shore of the Gulf of Mexico. The type is the only specimen I have seen.

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PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

NEW AND INTERESTING AMERICAN GRASSES.

BY C. V. PIPER.

The following miscellaneous descriptions and notes are part of the results of studies incidental to general systematic work upon American grasses during the past year. They are published at the present time principally because the projected monographs of several of the genera have been discontinued by the writer. The types of all the new species are in the National Herbarium.

Epicampes leptoura sp. nov.

Habit of *E. rigens* Benth. Culms rather stout, about a meter high, terete, scabrous, three-jointed. Sheaths smooth, longer than the internodes; ligule membranous, obtuse or retuse, 2–3 mm. long; blades very narrow, strongly involute, harshly scabrous, the lower ones 30 to 40 cm., the uppermost about 10 cm. long. Panicle spike-like, erect, narrow, pale, densely flowered, sometimes interrupted below, 10 to 25 cm. long, 5 to 6 mm. thick; rays closely appressed, the longest 1 cm. long. Empty glumes lanceolate, scabrous on the keels, exceeding the floret, the lower 4 mm. long with an awn 1 mm. long, the upper 3.5 mm. long with a flexuous awn of equal length; flowering glume minutely scabrous, 2 to 2.5 mm. long, ovate, truncate, three-nerved, bearing a very short awn from the back near the apex; palet as long or slightly longer, the two nerves meeting at the acute apex. Related to *E. rigens* Benth, but easily distinguished by the awned glumes.

Collected by C. H. Townsend and C. M. Barber, in the Sierra Madre near Colonia Garcia, Chihuahua, Mexico, No. 341, September 21, 1899, altitude 7,000 feet (Type).

Epicampes macrotis sp. nov.

A stout tufted grass about 1 meter high, with flat very scabrous leaves, very long firm auricles, and an erect rather loose narrow panicle. Culms terete, smooth, 80 to 100 cm. high. Leaves numerous, closely investing the base of the culm; sheaths smooth, striate, keeled, about 10 mm. broad, the margins prolonged into narrow auricles 2 to 4 cm. long; ligule very thin, scarious, laciniate; blades flat, strongly keeled, striate, retrorsely scabrous on the upper surface, margins and keel, 4 to 6 mm. wide, somewhat shorter than the culms. Panicle 30 to 35 cm. long, narrow, erect; rays irregularly fascicled, scabrous, erect, the longest 5 to 6 cm. long. Spikelets 3 to 3.5 mm. long; empty glumes obtuse, not keeled, subequal, shorter than the floret; flowering glume lanceolate, acute, three-nerved, smooth; palet obtuse, nearly as long as the flowering glume.

Collected by J. N. Rose in the Sierra Madre, Zacatecas, Mexico, No. 3528, August 7, 1897 (Type).

The species should be readily distinguished by its crowded sheaths and very long auricles.

Epicampes crassiculmis sp. nov.

A very stout and tall, pale, very smooth species with rather broad folded leaves and a large purplish panicle with ascending branches. Culms 1 to 2 m. high, 1 cm. or more thick, terete, very smooth, about six-jointed, from stout rootstocks. Sheaths smooth and polished, thick and firm, sparsely hairy in the throat, the lowest 70 cm. long, shorter than the joints; ligule obsolete; blades thick and rigid, folded, smooth beneath, striate above, scabrous on the margins, 8 to 10 cm. wide, apparently about a meter long. Panicle rather dense, 30 to 45 cm. long, 4 to 6 cm. wide; rays fasciculate, verticillate, erect or ascending, somewhat scabrous, the longest 15 cm. long. Spikelets 3 mm. long; empty glumes smooth, carinate, lanceolate, acute, the upper 2 mm. long, the lower $\frac{1}{2}$ to $\frac{2}{3}$ as long; flowering glume one-nerved, acute, smooth, awnless, 2.5 to 3 mm. long; palet slightly shorter; a second rudimentary floret is often present.

Collected by Dr. E. Palmer, No. 414, in alkali soil at Alamos, Sonora, Mexico, in 1891 (Type).

Melica montezumæ sp. nov.

A pale green, loosely tufted, erect perennial 50 to 60 cm. high, with loose, at length spreading panicles bearing silvery spikelets. Culms with 6 to 7 nodes, only the upper part naked, this striate scabrous. Leaves about 7, the lower 2 or 3 reduced to sheaths; sheaths striate, smooth, exceeding the internodes; ligules scarious, lacerate, adnate, 5 to 10 mm. long; blades linear, rather rigid, erect or ascending, flat or loosely involute, 10 to 20 nerved, scabrous on both sides, especially beneath, mucronate at the naviculate apex, 10 to 20 cm. long, 2 to 3 mm. wide. Panicle 10 to 18 cm. long, erect; rays smooth, in pairs or sometimes in threes, unequal, at first erect, at length divaricate or even reflexed, the longer 5 to 6 cm. long, sparingly branched and flowering above the middle, the shorter ones flowering from the base. Spikelets 7–9 mm long, on slender pedicels which are usually abruptly curved and pubescent just at the points of attachment. Perfect floret only one; lower empty glume oblong, retuse, silvery scarious in the apical third, 7 mm. long, five-nerved, only the midnerve reaching the apex, the others anastomosing about the middle of the glume; upper empty glume oblong-linear, obtuse, 7 mm. long, five-nerved, the lateral ones faint; flowering glume oblong, truncate and retuse, 6 to 7 mm. long, thick and green for three-fourths its length, scarious at the apex, eleven-nerved, the nerves rugose and anastomosing near the apex of the thick part, the intermediate ones bearing a few bristles; palet spatulate-oblong, retuse, 4.5 mm. long, the nerves ciliate, the margins narrow; sterile floret clavate, pedicelled, reaching the apex of the palet.

Santa Eulalia Mountains, Chihuahua, Pringle, No. 430, April 6, 1885 (Type); Chihuahua, E. Williamson, No. 342 in 1885; Sierra Mojada Mts., Coahuila, M. E. Jones, No. 482, April 19, 1892.

Heretofore mistaken for *M. laxiflora* Cav., a much taller Chilean species which differs in having 2 to 3 perfect florets, acutish empty glumes, more hairy 7-nerved flowering glumes and very scabrous sheaths.

Poa brachyglossa sp. nov.

Perennial; whole plant pale or glaucescent, the panicle often somewhat purple tinged. Culms terete, glabrous, smooth and firm, mostly 3-jointed, 60 to 100 cm. high. Sheaths smooth, glabrous, shorter than the internodes; ligules of the innovations very short, of the culm leaves 1 to 2 mm. long, scarious; blades rather stiff, acute, folded or involute, almost leathery in texture, 5 to 20 cm. long. Panicle narrow, erect or nearly so, 10 to 20 cm. long; rays in 6 to 8 obscure series of 2 to 5, short, clustered, ascending, somewhat scabrous. Spikelets oblong-linear, 7 to 10 mm. long, 3 to 6-flowered, the florets appressed. Empty glumes smooth, thin, with broad scarious margins, glabrous except the midnerve, which is scabrous above, the lower lanceolate, acute, 4 to 5 mm. long, 3-nerved, the lateral ones short, the upper ovate, 3-nerved, a little longer; flowering glume elliptic-ovate, obtusish, the sides much inrolled, smooth, or nearly so, quite firm in texture, convex, faintly nerved, the lateral nerves disappearing in the scarious apex; palet oblong-linear, obtuse, the nerves ciliate-scabrous, the lateral part half as broad as the internerve.

This is the representative of *Poa laevigata* Scribn. west of the Rocky Mountains. It is confined largely to somewhat alkaline soils, which it often covers in nearly pure growths. The short ligules separate it at once from any other species of the group, namely *laevigata*, *lucida* and *nevadensis*.

The following collections are representatives of *Poa brachyglossa*. The type has smooth leaves and culms, but other specimens included differ only in having both the culm and leaves somewhat scabrous.

Washington: Douglas County, Sandberg & Leiberg 267, June 22, 1893 (Type); Coulee City, Piper 3917, 3916, 3918; Cold Creek, Cotton 402; Without locality, Vasey 42; Wenas, Griffiths and Cotton 80; Loomis, Griffiths and Cotton 338; Cow Creek, Griffiths and Cotton 518; Colville Reservation, Griffiths and Cotton 391; Prosser, Griffiths and Cotton; Brewster, Griffiths and Cotton 264; Endicott, Elmer 1025.

Oregon: Silver Creek, Harney County, Cusick 2614; Steen's Mountain, Griffiths and Morris 637; Beulah, Leiberg 2316; without locality, Howell 188; Hay Creek, Crook County, Leiberg 210; Prineville, Leiberg 309.

Nevada: White Horse Mts., Griffiths and Morris 442; Winnemucca, Griffiths and Morris 29, 38; Woodworth, Tracy 262; E. Humboldt Mts., Watson 1318.

California: Mt. Lola, Kennedy and Doten 182; Mountains south of Dixie Valley, Davy, July 5, 1894.

Idaho: Without locality, Henderson 3076.

Poa pachypholis sp. nov.

Perennial, densely tufted, wholly glabrous below the inflorescence, 15 to 30 cm. high. Basal leaves numerous, the dead sheaths long persisting; sheaths often purplish; ligule hyaline, rather firm, acute, 2 mm. long; blades narrow, erect, very smooth, thickish, pale or glaucous, flat or loosely involute, 4 to 10 cm. long, 1 to 2 mm. wide; culm leaves usually 3, their sheaths exceeding the internodes, their blades short. Panicle dense, oblong, 2 to 5 cm. long; lower rays in twos, rarely in threes, smooth, spikelet-bearing nearly to the base. Spikelets 3 to 5 flowered, ovate, 6 to 8 mm. long, pallid, or more or less tinged with purple. Empty glumes 3.5 to 4 mm. long, subequal, ovate, acutish, smooth, thick and firm, with a narrow scarcely hyaline margin, each with three nerves, the lateral ones reaching only half way to the apex. Flowering glumes similar in texture to the empty ones, broadly oblong, obtuse, 4 mm. long, 5-nerved, the basal half of the nerves pubescent. Palet equalling the flowering glume, the nerves ciliate.

Ilwaco, Washington, on cliffs wet by the ocean spray, June 22, 1904, C. V. Piper (Type).

Among North American species this is closely allied only to *Poa alpina* L., but is at once distinguished by its narrow involute glaucous leaves and thick glumes. In aspect it resembles *Poa unilateralis* Scribn. but it has no close relation to that species.

Poa cottoni sp. nov.

A densely tufted perennial, 30 to 50 cm. high, the numerous innovations bearing many filiform glaucous and very scabrous leaves surrounded at base by the old dry sheaths, and bearing rather dense ovate or oblong erect usually purple panicles, 2 to 6 cm. long, on slender nearly naked stems. Culms erect, scabrous, especially just below the inflorescence; node solitary, near the base. Basal leaves very numerous, their sheaths loose, somewhat scabrous, reaching nearly to the node, persistent when dry; ligule scarious, obtuse, 1.5 to 2 mm. long; blades narrowly filiform, strongly involute, pale or glaucous, strongly scabrous, abruptly acute, 4 to 20 cm. long, ¼ to ½ the length of the culm; sheath of the culm leaf extending half way to the panicle, its short blade 1 to 3 cm. long. Panicle ovate or oblong, quite dense, 2 to 6 cm. long; rays short, scabrous, 2 to 4 at a node, bearing one to five spikelets at or near their tips, the lower rays branched in the larger panicles. Spikelets compressed, oblong-ovate, 3 to 5 or rarely 7-flowered, 6 to 10 mm. long; rachilla scabrous; florets closely imbricated; glumes firm, dull, hyaline margined; first empty glume 1-nerved, broadly ovate, hardly acute, scabrous on the keel above, sparingly ciliolate near the apex, 3 mm. long; second similar, 3-nerved, 4 mm. long; flowering glumes ovate, barely acute, 5-nerved or rarely 6–7-nerved, very sparsely scaberulous, scabrous on the keel, minutely ciliate near the apex, 4.5 to 5 mm. long; palet equalling or exceeding the glume, oblong-lanceolate, retuse, the nerves strongly ciliate, the lateral portions half as wide as the internerve.

Related to *Poa cusickii* and *Poa idahoensis*, differing from the former in its strongly involute narrower leaves, denser panicles, scabrous stems, and larger florets; from the latter in its smaller size, dense panicles, and close spikelets, and from both in its much wider glumes and usually purple panicles.

The following specimens have been examined:

Washington: Rattlesnake Mountains, Yakima County, Cotton 557, May 7, 1902 (Type); same locality, Griffiths and Cotton Nos. 4 and 20; Kahlotus, Cotton 1010.

Oregon: Grizzly Butte, Crook County, Leiberg 231; Calamity to Silvies Valley, Griffiths and Morris 814; Silver Creek Valley, Cusick 2613; Island Ranch, Griffiths and Morris 724.

Poa sandbergii Vasey.

A study of the types of *Festuca spaniantha* Phil., Anal. Univ. Chile 94: 174. 1896, and *Festuca patagonica* Phil., Anal. Univ. Chile 94: 174. 1896, in Philippi's herbarium show them to be identical with *Poa sandbergii* Vasey of the Columbia Basin. The recurrence of this species in the southern hemisphere is a fact as yet unparalleled among the western Poas.

Distichlis multinervosa (Vasey). comb. nov.

Melica multinervosa Vasey, Bot. Gaz. 16: 235, 1891.

This grass is closely related to *D. texana* (Vasey) Scribn. and it is not congeneric with *Melica*. No other specimens seem to have been collected since the plant was found by Mr. G. C. Nealley at Brazos Santiago, Texas.

Bromus vestitus Schrad.

Bromus vestitus Schrad. Gött. Gel. Anz. 3: 2074, 1821.

This grass has not previously been recorded from this country, but it appears to be quite widely established in California. The following specimens have been seen: Bakersfield, Kern County, Davy 1746; Pilarcitos, San Mateo County, Davy 1146; Yosemite Valley, Bioletti 15, in May, 1900.

Bromus marginatus maritimus subsp. nov.

Culms coarse, 60 to 90 cm.; leaf-blades glabrous, 5 to 10 cm. broad; panicle narrow, compact, 10 to 15 cm. long, the spikelets densely crowded.

A characteristic subspecies from the sea coast of California. The scanty herbarium material has heretofore been considered as abnormal, but a splendid series of specimens collected by Mr. J. B. Davy shows that its peculiarly dense panicle is a constant character.

The following specimens have been examined, all from California: Point Reyes, Davy 6798 (Type): 6744: 6760; Monterey, Davy 7281; Ocean Beach, Lemmon; San Francisco County, Michener and Bioletti, June 22, 1892; without locality, Lemmon 383, in 1882; Ocean Bluffs near San Francisco, Piper 6824.

Bromus tectorum nudus Klett and Richter.

Bromus tectorum nudus K. and R. Fl. Leipzig 109, 1830.

This variety is distinguished from true *Bromus tectorum* L. by having smooth or merely scabrous flowering glumes. It has become established in several western states as indicated by the following specimens: Uinta County, Wyoming, A. Nelson 7215; Klamath County, Oregon, Cusick 2844; Columbia Falls, Montana, Blankenship 36.

Hordeum comosum Presl.

Hordeum comosum Presl. Rel. Haenk. 1:327, 1830.

The following specimens seem referable to this Chilean grass: Alma, Wash., Elmer 535, June, 1897; Colville Reservation, Wash., Griffiths and Cotton 363, June, 1902. The latter specimen is an excellent match for the specimen in Philippi's herbarium of Chilean grasses. The species is very close to *H. caespitosum* Scribn., differing only in having pubescent sheaths and blades.

Agropyron griffithsi Scribn. & Smith in herb.

A pale, loosely tufted grass, 30 to 80 cm. high, having stout and elongate reeping rootstocks. Culms 2-jointed, cylindric, slightly striate, glabrous. Sheaths striate, glabrous or glaucous or puberulent; ligule obsolete or nearly so; blades rather rigid, strongly striate, mostly involute, smooth beneath, scabrous above, 5 to 12 cm. long. Spike erect, 8 to 15 cm. long, rather close; joints of the rachis flattened, very scabrous on the angles, usually about half as long as the spikelets. Spikelets pale, oblong, subterete appressed, usually half-overlapping, closely 5 to 7 flowered; joints of the rachilla clavate, scabrous on the angles, 1 to 1.5 mm. long. Lower glume linear-lanceolate, 3-nerved, 8 mm. long, tipped with an awn 3 mm. long, scabrous on the nerves; upper very similar, but broader and 4 to 5-nerved. Flowering glume oblong, firm, somewhat flattened on the back, smooth and nerveless below, 5-nerved and scabrous apically, 8 to 10 mm. long, tipped with a stout divergent scabrous awn of equal length; palet oblong-linear, obtuse, shorter than the body of the flowering glume, the nerves strongly scabrous ciliate, the sides less than one-half as broad as the internerve.

Type specimen collected by Williams and Griffiths, No. 140, on the North Fork of Clear Creek, Wyoming, altitude 2,600 meters. Other specimens are referred here as follows:

Wyoming: Near Beulah, Griffiths 412; Inyan Kara, Griffiths 641.

North Dakota: Dickinson, M. A. Brannon 123; Broncho, L. R. Waldron 2232.

The species is near *A. albicans* Scribn. & Smith, but is readily separable by its nearly smooth flowering glume.

Agropyron sitanioides J. G. Smith sp. nov.

"Culms erect or ascending, 20 to 30 cm. high, their bases clothed with tumid leaf sheaths; innovations ½ to ⅔ the length of the culm, stout, rigid, internodes terete, glabrous. Sheaths closely enveloping the internodes scarious along the margins, glabrous; ligule obsolete, blades rigid, erect, involute, filiform, sharply-pointed, scabrous on the back, strongly nerved and scabrous above and on the margins. Spike rigid, erect, long-exserted, 5 to 8 cm. long. Spikelets strict, erect, few-flowered. Internodes of the rachilla 1 mm. long, hispid. Empty glumes subulate, entire or bifid, 2-nerved, very scabrous along the nerves, with a stout, scabrous, ascending awn 3 to 4 cm. long; flowering glumes coriaceous, lanceolate, applanate on the back, 8 to 9 mm. long, nearly 2 mm. wide, scabrous, with a stout, ascending or spreading awn about 5 cm. long arising from between two short teeth; palet shorter than the flowering glume, obtuse, callus hispid. Internodes of the rachis compressed, scabrous along the margins, somewhat dilated above, about 4 to 5 mm. long.

"Type collected by David Griffiths, No. 735, Rapid City, South Dakota, August 28, 1897. Growing on dry knolls.

This species is doubtfully referred to *Agropyron.* It agrees with species of *Sitanion* in having the rachis of the spike subarticulate at maturity; the empty glumes bifid, and the flowering glume trifid. It is like *Elymus* in the lanceolate empty glumes, scabrous callus of the flowering glume, and scabrous internodes of the rachilla, but the solitary spikelets and opposite empty glumes enclosing the base of the spikelet between them denote a closer generic affinity with *Agropyron,* although it is not closely related to any of the American species."

Agropyron flexuosum comb. nov.

Sitanion flexuosum Piper, Erythea 7:10. (1899).

Repeated field observations of this species since its publication, together with the careful study of a large series of specimens, demonstrate that it must be considered a close relative of *Agropyron spicatum* (Pursh). It is not at all uncommon to find the spikelets at some of the nodes of the rachis in this last species, for instance in Cusick's No. 1914, from eastern

Oregon ; in Flett's No. 1383, from Skamania Co., Wash.; and in Piper's No. 3953 from Wawawai, Wash. This, of course, is an approach toward *Elymus.* In the plant described as *Sitanion flexuosum,* not only are there two spikelets at one or more joints of the rachis, but many of the empty glumes, even where there is but a single spikelet, are long-awned and more or less deeply bifid or trifid. The flowering glume has its apex more pronouncedly bifid than in the typical form, and the teeth usually bear small awns. Apart from these characters the spikelets are exactly those of *A. spicatum.* The spike tends to be flexuous and nodding, but exactly this same thing occurs in neighboring plants which otherwise are clearly referable to *A. spicatum.*

Elymus mollis Trin.

Elymus capitatus Scribn., U. S. Dept. Agr. Div. Agrost. Bull. 11 : 55, 1898.

The supposed species *E. capitatus* is merely a form of *E. mollis* Trin. modified by the attacks of nematode worms in the ovaries. This form is confined almost entirely to sand dunes, in which localities from fifty to ninety per cent. of the plants have the heads thus affected. The attacks of these microscopic worms in *E. mollis* result in the heads becoming much shorter and broader, so as to vary from subglobose to oblong, while the spikelets become somewhat proliferous, all the parts being abnormally elongated and less hairy. It is not uncommon to find both normal and affected heads on the same plant, the contrast in their forms being striking. *Elymus mollis* is abundant all along the Alaskan coast, while the *capitatus* form is plentiful on the sand dunes near Yakutat and on Cook Inlet near Homer and near Kenai.

VOL. XVIII, PP. 151-156 JUNE 9, 1905

PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

DESCRIPTIONS OF SEVEN NEW SUBSPECIES OF AMERICAN BIRDS.

BY OUTRAM BANGS.

The seven birds herein described as new subspecies are from material that has accumulated in the Bangs collection, from various sources, during the past few years. The descriptions have been prepared from time to time and are now published together to avoid the inconvenience of a number of short articles.

Crypturus soui mustelinus subsp. nov.

SANTA MARTA TINAMOU.

Type from mountains near Santa Marta, Colombia, 3,000 feet altitude, ♀ adult, No. 5002, coll. of E. A. and O. Bangs. Collected February 4, 1898, by W. W. Brown, Jr.

Characters.—Similar to true *C. soui* of Guiana and Venezuela, but much more brightly colored. Adult ♀: Whole upperparts, except crown which is dusky, rich, bright chestnut, the wing coverts tipped with orange-rufous and ferruginous (in true *C. soui* the upperparts are, in the adult ♀ Prout's brown shading on rump toward burnt umber, and hazel on wing coverts); underparts rich tawny-ochraceous or tawny, becoming darker and brighter, more ochraceous-rufous on sides, under surface of neck and upper breast, with a slight vinous cast overlaying this color on neck, not decidedly paler in middle of belly (in true *C. soui* the underparts are much duller and paler with a decidedly paler-buffy-patch in middle of belly); chin white; throat white, the feathers tipped with ochraceous.

MEASUREMENTS.

No.	Sex.	Locality.	Wing.	Tail.	Tarsus.	Culmen.
5002	♀ ad.	Santa Marta, Colombia, 3,000 ft.	128	27	39	20
6129	♀ ad.	La Concepcion, " 3,000 ft.	125	28	37.5	19.5

Remarks.—This form, which replaces true *soui* of Guiana and Venezuela in the Santa Marta region of Colombia is much more brightly colored than the typical form, and judged from the plate and descriptions is not unlike *C. castaneus* Scl. in color. That it is not that species, but a member of the *soui* series, is shown by its whitish throat and smaller dimensions.

I have seen several specimens from Guiana and have one adult ♀ taken by Capt. Wirt Robinson at San Julian, Venezuela, that is just like them. In fact, Plate 829, of d'Aubenton's Planches Enlumineéz, on which *Crypturus soui* was based, could not be more like this specimen, if it had actually been taken from it.

Crypturus soui mustelinus needs no comparison with the dark-necked form *C. soui modestus* that occurs just north of it in Panama. I have seen no males of the new form, but undoubtedly they would be much darker and duller than the females as is the case with most species of *Crypturus*.

Scardafella inca dialeucos subsp. nov.

NICARAGUA SCALED DOVE.

Type from the boundary line between Honduras and Nicaragua, 180 miles from Pacific coast.* No. 4796, coll. of E. A. and O. Bangs.

Characters.—Somewhat similar to true *S. inca* of Mexico, etc., but larger wing coverts grayish white in marked contrast to rest of coverts; underparts more distinctly barred with blackish, the bars extending over the entire breast, though less distinct as they reach the throat; vinaceous of breast much paler and more restricted, the buffy white of belly reaching farther forward. Similar also to *S. ridgwayi* † of South America, but upperparts much darker, with the dusky squamatulations less distinct; light patch on wing not so white; and underparts less heavily barred with blackish. Size as in *S. inca inca*.

Measurements.—Type: Wing, 89; tail, 90.5; tarsus, 16; culmen, 15.

Remarks.—*Scardafella inca inca* ranges from southern Arizona and Texas through Mexico and Guatemala, with but little if any geographical variation, but at the very southern extremity of its range gives place to a race that in all the points of difference from the northern form approaches *S.*

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*The type is one of a collection of birds which was bought by me some years ago from an engineer who had been engaged in work on the boundary line between Honduras and Nicaragua. The specimens were all taken at one point in summer and early autumn.

† Dr. Richmond has pointed out that, even if *S. ridgwayi* of Margarita Id. is not considered a valid form the name must hold for the species, *Columba squamosa* Temm. and Knip. being preoccupied.

ridgwayi of South America. In fact, if there was not a wide gap between the ranges of *S. inca* and *S. ridgwayi* the new form here described might almost be looked upon as an intergrade between them.

Claravis pretiosa livida subsp. nov.

COLOMBIAN GRAY DOVE.

Type from Rio Cauca, Colombia, ♂ adult, No. 4056, coll. of E. A. and O. Bangs. Collected June, 1898, by J. H. Batty.

Characters.—Very similar to true *C. pretiosa* (Ferrari-Perez) of Mexico, but paler throughout. Adult ♂ with the breast and belly pearl gray (French gray to cinereous in true *C. pretiosa*). Adult ♀ with wings, back and head paler brown.

MEASUREMENTS.

No.	Sex.	Locality.	Wing.	Tail.	Tarsus.	Culmen.
4056	♂ad.	Colombia, Rio Cauca	114	73	18.2	15
4055	♂ad.	Colombia, Las Tambos	115	74	18.6	15
4054	♀ ad.	Colombia, Castilla	114	70	18	14.4

Remarks.—In 1886, Fernando Ferrari-Perez * substituted the name *pretiosa*, based on Mexican birds, for the preoccupied *cinerea* † by which title the gray dove had till then been known.

In Catalogue of Birds in British Mus. XXI, Salvadori mentions no differences between northern and southern examples of the gray dove, but calls the bird throughout its range by the preoccupied name *cinerea*, and even Sharpe,‡ though he recognizes the Mexican form by Ferrari-Perez's name, retains for the southern form *cinerea* of Temm. and Knip.

The Colombian form is only a closely related subspecies, differing chiefly in the much paler head and underparts in the male. The darkest skins of true *C. pretiosa* I have seen come from Mexico, while a large series from Panama shows a tendency toward the paler colors of *C. pretiosa livida*, though none quite match the Colombian form in this respect and some are almost as dark as Mexican birds.

Geotrygon martinica digressa subsp. nov.

GUADELOUPE QUAIL DOVE.

Type from Guadeloupe, Lesser Antilles. ♀ adult. No. 11,442, coll. of E. A. and O. Bangs. Collected May 9, 1901.

Characters.—Much larger than *G. martinica martinica* (Linn.) and much paler in coloration. General color of upperparts bright hazel, glossed with metallic rose purple (the upperparts in true *G. martinica* are almost liver brown and the metallic gloss is lilac); crop region vinaceous-pink (dark purplish vinaceous in true *G. martinica*); belly and under tail coverts paler, more buffy, less brownish or clay color.

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* Catalogue of Mexican Animals, Proc. U. S. Nat. Mus., IX, p. 175, 1886.

† *Columba cinerea* Scop., Del. Flor. et Faun. Insubr. II, p. 94, n. 93, 1786, being some eastern dove not yet satisfactorily identified, but of course excluding the use of *Columba cinerea* Temm. and Knip., Pig. I, p. 126, pl. 58, 1808–11, for the American Gray Dove.

‡ Hand-List of Birds, Vol. I, p. 82, 1899.

MEASUREMENTS.

No.	Sex.	Locality.	Wing.	Tail.	Tarsus.	Culmen.
11,442	♀ ad.	Guadeloupe	169	84	36	25

Specimens of *Geotrygon martinica martinica* measure—

13,513	♂ad.	Dominica	152	75	33	25
13,514	♂ad.	do.	150	71.5	33	24
13,556	♀ ad.	do.	150	74	33	25
13,557	♀ ad.	do.	156	76	33.5	24.5
27.427*	—ad.	Sta. Lucia	152	79	33	24.5
27,428*	—ad.	do.	149	77	33.5	26
27,429*	—ad.	do.	153	79	34	25
28,575*	—ad.	do.	150	79	34	26

Remarks.—If the large series of *G. martinica* I have examined in this connection is properly sexed by the collectors, and I see no reason why it is not so, then the sexes in this quail dove do not differ in color. The plain dark colored examples are all marked "young" and appear to be such. These had been supposed to be adult females, and the species was given by Salvadori in Cat. Birds, Brit. Mus., Vol. XXI, as having the same difference in color between the sexes as *Geotrygon montana.*

I have seen no skins from Martinique, but have examined a number from both Dominica and Sta. Lucia which are precisely similar. The one specimen from Guadeloupe differs so much from these that the question is simply whether it shall be called a species or subspecies; the latter course perhaps better expresses its relationship.

The present subdivision of the species, then, restricts true *G. martinica* to Sta. Lucia, Martinique, and Dominica and makes the bird of Guadeloupe a well-marked island form. Specimens from Guadeloupe appear to be very rare in collections and when Salvadori wrote Vol. XXI. he could only conjecture that the bird probably occurred there.

Dacnis cayana callaina subsp. nov.

CHIRIQUI DACNIS.

Type from Divala, Chiriqui, ♂ adult, No. 8200, Coll. of E. A. and O Bangs. Collected November 2, 1900, by W. W. Brown, Jr.

Characters.—Adult ♂ with the blue portion of the plumage cerulean or turquoise, exactly as in *D. cayana cayana*, of South America, but at once distinguished from that form by the throat being dull bluish green *instead*

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* Mus. of Comparative Zoölogy, Cambridge, Mass.

of black, and the throat patch less extensive. Similar in size and color of throat patch, to *D. cayana ultramarina* of Panama to eastern Nicaragua, but the blue portion of the plumage very different, being in the latter form bright ultramarine or cobalt. Size as in true *D. cayana.* Type, ♂ adult: Wing, 61; tail, 41.5; tarsus, 15.2; culmen, 12.6.

Remarks.—This is the form about which there has been so much discussion. Salvin and Godman in Biol. Cent. Am. I, p. 244, mention its peculiarities and say that the pale color of the throat is perfectly constant, but that they do not consider this a distinctive character. Ridgway in Birds of North and Middle America, II, p. 393, foot-note, again calls attention to the differences shown by the Chiriqui bird and very hesitatingly refers it to true *D. cayana* on account of lack of material.

In my way of looking at the geographical races of birds I can see no alternative but to give this form a name. It is remarkable that in Chiriqui there should be a race of *Dacnis cayana* so exactly like the South American form in general coloration, except for the throat, and yet cut off from that form and nearly surrounded by the dark colored *D. cayana ultramarina.* There are, however, many other peculiar forms in Chiriqui with equally restricted ranges.

It is also remarkable that the bird of central Peru should be so much like the Chiriqui form, from which it differs chiefly in size. The measurements given by Von Berlepsch and Stolzmann for their *Dacnis cayana glaucogularis* from La Merced are: Wing, 66.5 to 67; tail, 45 to 49.5; tarsus, 15; culmen, 13 (two adult males).

Mr. Harry C. Oberholser has kindly compared my Chiriqui male and one in the National Museum with five skins of *D. cayana glaucogularis* from Peru and finds the difference in size to be constant, and the Chiriqui form also to be paler and more greenish in color.

Calospiza lavinia cara subsp. nov.

HONDURAS TANAGER.

Type from Ceiba, Honduras, ♂ young adult, No. 10,024, coll. of E. A. and O. Bangs. Collected January 9, 1902, by W. W. Brown, Jr.

Characters.—Similar in color to *C. lavinia lavinia* (Cassin) from northern Colombia to Nicaragua, but much larger with a much longer and more slender bill.

MEASUREMENTS.

No.	Sex.	Wing.	Tail.	Tarsus.	Exposed Culmen.
10,024	♂ type	73	50.5	19	12.4
10,025	♀ topotype	70	48	17.2	12

Remarks.—In a paper on the birds and mammals collected by Mr. Brown on the coast of Honduras * I mentioned the peculiarities of these two specimens, and called attention to the fact that the place whence they came was the most northern from which the species had been recorded. Since then I have examined a number of additional skins of true *C. lavinia* from all of which the Honduras bird differs so much in size and length of bill, that it must certainly be regarded as a well-defined subspecies quite worthy of recognition by name.

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* Bull. Mus. Comp. Zoöl. XXXIX, No. 6, p. 155, July, 1903.

Phœnicothraupis rubica confinis subsp. nov.

HONDURAS ANT TANAGER.

Type from Yaruca, Honduras, ♂ adult, No. 10,034, coll. of E. A. and O. Bangs. Collected February 25, 1902, by W. W. Brown, Jr.

Characters.—Adult ♂ intermediate in color between true *P. rubica* of South America and *P. rubica vinacea* of Costa Rica to Panama—much darker, more vinaceous red than in *rubica*, but lacking the dusky mottling on throat of *vinacea*. Compared with the male of *P. rubica rubicoides* of southern Mexico, the new form is much deeper red and vinaceous below and much redder, less brownish above. Adult ♀ quite different in color from that sex in the allied forms—much greener than in true *rubica* with little of the reddish brown shade so marked, especially on tail, in that form; crown patch clearer, paler yellow. Not so greenish in general coloration as *vinacea* with the throat much yellower, wholly lacking the dusky mottling. From the female of *rubicoides* the new form differs in much greener less brownish general coloration and in having the yellowish throat patch much more clearly marked and much yellower, less brownish.

Size a little less than in *P. rubica rubica.*

MEASUREMENTS.

No.	Sex.	Wing.	Tail.	Tarsus.	Culmen.
10,034	♂ ad. type	98	80.6	23.2	18
10,035	♂ ad. topotype . . .	97	82	24	18.6
10,036	♂ ad. do.	94.4	77	24	——
10,037	♀ ad. do.	90	75	24	17.6
10,038	♀ ad. do.	86	69.6	23.2	17.4
10,039	♀ ad. do.	91	72.4	23	18

Remarks.—The six specimens on which this well-marked new form is based had lain in my collection identified as *P. rubica rubicoides* ever since Mr. Brown sent them in, until last winter, when E. W. Nelson saw them and instantly declared them to represent a new form. He very kindly helped me compare them with ample material, when it at once became evident that the form from the coast region of Honduras is quite as strongly characterized as any of the geographical races of *Phœnicothraupis rubica.*

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PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

MAMAIA AND MAMAIIDÆ.

BY THOMAS R. R. STEBBING.

Parental affection will excuse and may almost demand on my part a defense of the terms *Mamaia* and *Mamaiidæ* against the rival claims of *Paramaya*, recently advocated by Miss Mary J. Rathbun in these proceedings (Vol. XVIII, p. 73, February 21, 1905). We are in substantial agreement as to the general principles that should govern zoological nomenclature, but the facts of the particular case to which those principles are applied require to be rather narrowly scrutinized. Briefly to recapitulate, the position is this: Lamarck in 1801 published a generic name *Maja* (or *Maïa*), which by prompt transfer came into use for the crab known down to the present day as *Maia squinado* (Herbst). This *Maja* or *Maia* is now admitted to be untenable. In 1837 de Haan published, without description, two figures of a species called on the plate "*Pisa* (*Paramaÿa*) *spinigera*, n." In 1839 he published a description of "*Maja* (*Maja*) *spinigera*, n. sp.," with a reference to the plate "T. XXIV. f. 4 ♀ (*Paramaya*)," and in 1849, under "Errata in tabulis specierum," he writes "Tab. XXIV. fig. 4: *Maja* (*Paramaya*) *spinigera* n.; lege: *M.* (*Maja*) *spinig.*" It should be noticed that neither in 1839 nor in 1849 does de Haan quote the plate legend quite accurately, since on both occasions he uses *Paramaya*, a word of four syllables, instead of *Paramaÿa*, which by the marks of diæresis was made a word of five syllables, unless we take the ÿ to represent the Dutch i j, which would throw some doubt on the Latinity of *Paramaya*.

Miss Rathbun argues that it was not within de Haan's competence, after the publication of his plate, to make the change which he recorded in his text. But here a question arises of somewhat wider interest than the immediate subject of our controversy.

In the introduction to his very valuable "Index Animalium" (p. vii, Cambridge, 1902) Mr. C. D. Sherborn lays down a rule, for which he is himself, I imagine, exclusively responsible. He says :

> The figure depicted on a plate may, or may not, be the drawing intended by the author, it is the work of the artist who is also responsible for the descriptive legend. In numerous instances the descriptive legend on a plate is quite erroneous, and has been repudiated by the author in his text. Until the text descriptive of a plate appears, the names on the plate must be considered as *nomina nuda*, and it is open to any one to describe and rename such *nomina nuda*."

Obviously for my present purpose this legislation would be completely decisive, as showing that *Paramaya* had no validity up to the time when it was disowned and cancelled by its reputed author. To me, however, Mr. Sherborn's statement seems too sweeping. I can not accept his dictum that the artist is responsible for the descriptive legend on a plate, in any other sense than that which would make the printer responsible for the descriptive legend on a page of text. In each case, as we all know, the author's intention may be sadly misrepresented, but in the long run we find ourselves deeply indebted to the general accuracy both of printers and lithographers. There are cases in which a good figure will tell much more than an indifferent description, and in these there seems no reason why the satisfactory figure should not be allowed to give validity to the accompanying name of a species. But this is not the same thing as saying that any and every figure should have the privilege even in regard to specific names. Much more will the license require restriction when genera or subgenera are in question. Can we really be expected to accept de Haan's two figures of the species *spinigera* as an adequate definition of a new subgenus ? How could that be adequate for the rest of the world, when it was not adequate for the author himself ? *Paramaya* of the figures was a subgenus of *Pisa*, but this subgenus was never described, simply because investigation showed that there was no such subgenus. It was not the name only that was dropped, but the thing. That which de Haan eventually described was a subgenus, not of *Pisa*, but of *Maja*. It must be considered fortunate that he did not choose to name it *Paramaya*, for, had he done so, we should have been saddled with a generic name and several others consequent upon it all signifying a relationship to *Maja*, when carcinology no longer possessed a *Maja* to which they could be either nearly or distantly related. Under these circumstances I trust that *Mamaia* and *Mamaiidæ* will be allowed to stand.

VOL. XVIII, PP. 161-162 JUNE 29, 1905

PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

DESCRIPTION OF A NEW GENUS AND SPECIES OF TROCHILIDAE.

BY HARRY C. OBERHOLSER.

A single specimen of a hummingbird in the collection of the Field Columbian Museum of Chicago seems to represent a new genus as well as a new species. It is here described through the courtesy of Mr. Charles B. Cory, the Curator of Birds in this museum.

Aeronympha[*] gen. nov.

Chars. gen.—Wings of moderate length, reaching when closed to within about 12 millimeters of the end of the tail; none of the primaries narrowed, but much as in *Vestipedes* and *Cyanolesbia;* tail about two-thirds the length of wing, and forked for one-fourth its own length, the rectrices obtusely and rather abruptly pointed, about 7 mm. in width, very gradually becoming slightly less than this basally; upper fourth of tarsus feathered, and together with the lower tibia, enveloped in a small tuft of light-colored feathers, reaching on the former about half-way to the toes; bill not long, but exceeding the head, straight, subcylindrical, moderately slender, slightly dilated laterally near the base, and rather abruptly pointed at the tip, neither maxilla nor mandible with any trace of subterminal serrations; nostrils covered by the frontal feathers which extend out on maxilla for nearly one-third the length of bill measured from the rictus, and considerably beyond the feathering between the rami of the mandible.

Type.—Aeronympha prosantis sp. nov.

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[*] *ἀήρ*, air; *νύμφη*, nymph.

It is rather difficult to say with what genus this new bird shows closest affinity, since if it should prove to be a female it possibly lacks the tail-development of the male. From *Cyanolesbia* it differs in much shorter, less deeply forked tail, presence of tibio-tarsal tufts, and rather more narrow, abruptly, less sharply pointed bill. From *Vestipedes* (=*Eriocnemis*) it may readily be distinguished by the more narrow tail-feathers, much less conspicuous development of the tibio-tarsal tufts, less extensively feathered tarsus, and the greater extent of the frontal feathering on the base of the maxilla. From *Zodalia*, which it seems most to resemble, it may be separated by its relatively shorter, less deeply forked tail, with more sharply pointed rectrices, slightly stouter bill, and the presence of well marked tibio-tarsal tufts.

Aeronympha prosantis sp. nov.

Type.—From Colombia [Bogota]. No. 11,852, Field Columbian Museum Adult, sex unknown.

Description.—Plumage of the upper parts metallic, but not glittering; pileum and nape deep reddish violet, the feathers of the former with bluish green tips; upper back, scapulars, and sides of neck deep bottle green, merging gradually into the deep reddish violet of lower back, rump, and upper tail-coverts; tail prune purple; wing-quills, greater and primary coverts fuscous, with a prune purple sheen; median and lesser coverts deep reddish violet, those of the latter lying nearest the bend of the wing with broad bottle green edgings; anteorbital region (hind part of lores) black, the feathers with whitish bases; infraorbital stripe (continuous with lores) anteriorly black, posteriorly dull greenish; a conspicuous spot of creamy white just behind the eye; remainder of postocular region deep reddish violet like the nape; a rather broad streak of tawny ochraceous from the rictus to opposite the middle of the eye below the infraorbital stripe; rest of cheeks dull metallic parrot green with narrow edgings of tawny; chin reddish violet, the feathers with relatively large metallic grass green subterminal crescentic bars, and narrow tawny margins; remainder of lower parts metallic parrot green, the feathers of the medial portions and especially of all the lower abdomen edged with tawny; the lower tail-coverts mostly tawny ochraceous with large central spots of green; a tuft of slate colored white tipped downy feathers on each side of the lower abdomen; tibio-tarsal tufts cream white; lining of wing deep reddish violet with considerable metallic green anteriorly. Length of wing, 64; lateral tail-feathers, 47; central tail-feathers, 33.5; exposed culmen, 15.3; bill from rictus, 20; tarsus, 6.5; middle toe, 5; middle claw, 3.5 mm.

Unfortunately the only example of this hummingbird is without indication of sex, date, or further locality than "Colombia." It is, however, of the well-known Bogota make, and came probably from that vicinity. It has the appearance of being a female, but an adult.

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PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

TWO NEW CHIPMUNKS FROM COLORADO AND ARIZONA.

BY C. HART MERRIAM.

Both of the chipmunks here described are of unusual interest. One inhabits the pinyon and juniper belt in the desert region of northeastern Arizona and southeastern Utah, and is one of the handsomest members of the genus ; the other is the common small chipmunk of the high mountains of Colorado; it has been previously confused with *quadrivittatus* of Say, which proves to be a much larger species. The specimen on which Say's species was based was collected by Long's Expedition to the Rocky Mountains on July 17 or 18, 1830, on the Arkansas River. The party, which included the naturalist Thomas Say, was encamped from the evening of July 16 to the morning of July 19, at a locality described as about thirty miles below "the place where the river leaves the mountains," which would be about 26 miles below the present Canyon City. Referring to this camp, Say states, "Among the animals taken here, was the four-lined squirrel (*S. 4-vittatus*) a very small and handsome species." This fixes the type locality with a definiteness not open to question.

Recent field work in eastern Colorado shows that two species of chipmunk occur in the region, one inhabiting the Boreal zone in the high mountains, the other the Transition and Upper Sonoran foot hills, extending out toward the plain as far as the land is covered with a scattered growth of junipers. The mountain species is slightly smaller than the foot-hills form, but the name "*quadrivittatus*" has been commonly applied to both. Say's original description is equally applicable to both, except for the measurements, which were given as follows:

"Length from the nose to the base of the tail, 4¼ inches,
of the tail, 3
of the hair at tip of the tail, 1 nearly."

As we measure mammals nowadays, Say's measurements of body and tail are too small for even the smaller of the two species, but it must be remembered that at the time Say wrote, and for half a century afterwards, no rules for the measurement of mammals had been formulated, and that by the old method the dimensions recorded were considerably less than by present methods. Furthermore, the difference in size of the two species is so slight that the fact that there are two species in the region appears to have thus far escaped the attention of naturalists. The third measurement given by Say, that of the length of hair at tip of tail, agrees best with the larger species—the tail hairs of the smaller one, particularly in worn summer pelage, falling considerably short of an inch.

Field work conducted in Colorado by several field naturalists of the Biological Survey (E. A. Preble, J. Alden Loring, and Vernon Bailey) has demonstrated the fact that the larger of the two chipmunks is common throughout the Arkansas Valley in the region at which the type specimen was obtained, and that the small mountain species does not occur in the region at all and can not be found until the mountains are penetrated far enough to reach the Boreal zone. This shows beyond question that Say's *quadrivittatus* is the foot-hill chipmunk of eastern Colorado, and that the mountain species, which has commonly been included under this name, requires a new name.

Comparison of the Colorado mountain chipmunk with the other small chipmunks of the West shows that its nearest relative is *E. amœnus* of the California Sierra, thus affording another instance of the close relationship of species inhabiting the mountains bordering the two sides of the Great Basin.

Eutamias amœnus operarius subsp. nov.

Type from Gold Hill (altitude 7,400 feet), Colorado. No. 129,808, ♀ young adult, U. S. National Museum, Biological Survey Collection. October 8, 1903. Vernon Bailey. Original No. 8160.

Characters.—Similar to *amœnus* but lacking the distinct black on anterior two-thirds of posterior aspect of ear; lower dark cheek stripe and stripe between eye and ear usually narrower; tail longer; upper side of tail more strongly fulvous, the underlying black less marked; underside of tail with submarginal black band narrower; median dorsal stripe blacker and more pronounced on back of neck and occiput; outer lateral stripe more pronounced.

In the late fall pelage, which lasts until the breeding season, the rump and middle pair of dorsal light bands are gray, as in *amœnus*, but in postbreeding pelage the rump is more olivaceous, more or less grizzled with fulvous; the middle pair of pale dorsal stripes are less gray, and the shoulders and anterior part of back more deeply and extensively fulvous. Some specimens in postbreeding pelage have the underparts suffused with yellowish and fulvous as in the larger *luteiventris*.

Measurements (taken in flesh).—Type specimen: Total length, 200; tail vertebræ, 93; hind foot, 31. Average of 10 specimens from Estes Park, Colorado: Total length, 199; tail vertebræ, 92; hind foot, 31.

Eutamias hopiensis sp. nov.

Type from Keam Canyon, Painted Desert, Arizona. No. 67,768, ♀ adult, U. S. National Museum, Biological Survey Collection. July 27, 1894. A. K. Fisher. Original No. 1688.

Characters.—Size medium or rather large, as in *quadrivittatus;* general color pale golden fulvous, particularly in winter pelage when even the dark stripes are only slightly deeper fulvous than the flanks; head and rump pale.

Color.—Top of head pale buffy gray, slightly darker in postbreeding pelage; rump, pale grizzled ochraceous gray, only slightly darker in postbreeding pelage; outer pair of light stripes white; inner pair of light stripes grizzled white and gray, sometimes tinged with buffy; dark dorsal stripes in winter bright fulvous, in summer with black centers; tail deep rufous, the underlying black showing through from above; under side with black submarginal band rather narrow.

Measurements.—Average of 10 specimens from type locality measured in flesh: Total length, 224; tail vertebræ, 101; hind foot, 33.5.

Remarks.—Dr. Fisher collected a fine series of this remarkably handsome chipmunk in the juniper and pinyon belt at Keam Canyon, where it was living among rocks and cliffs. He tells me that its name in the language of the Hopi (or "Moki") Indians is *Kowéna.* The Biological Survey has specimens also from Bluff City, Utah, collected by J. Alden Loring. The species has been previously referred to *gracilis*—a very different animal and one which proves to be hardly distinguishable from true *quadrivittatus* of Colorado.

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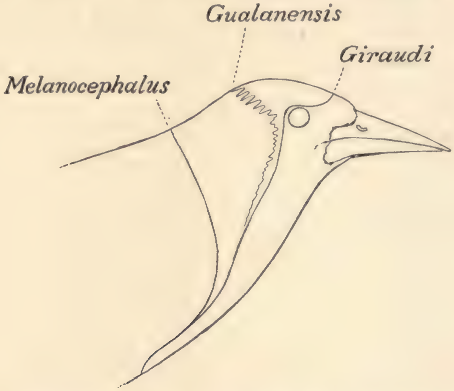
WHAT IS *ICTERUS GUALANENSIS* UNDERWOOD?

BY OUTRAM BANGS.

Being anxious to learn the real affinities of *Icterus gualanensis* Underwood, E. W. Nelson and I sent to G. S. Miller, Jr., while he was in the British Museum last spring, examples of *Icterus giraudii* and *I. melanocephalus* in various stages of plumage, and asked him to compare them critically with Underwood's type preserved in that great institution. Miller promptly returned us a long account of the type together with the result of his comparison and from these it appears that *I. gualanensis* is either a distinct and very local species or rather more probably one of those strange abnormalities that occasionally occur among birds.

The whole case may be briefly summed up as follows: *Icterus gualanensis* was described by Underwood from an adult specimen collected by himself at Gualan, Guatemala (Bull. Brit. Orn. Club, No. LV, p. LIX, June 30, 1898). It proves on comparison of a large amount of material (by Miller) to be of the same shade of yellow—cadmium yellow—as *I. giraudii*, thus differing from the only other species it needs comparison with—*I. melanocephalus*—which has the yellow of upperparts dull saffron or wax yellow and the underparts lemon or gamboge. It exactly matches adult examples of *I. giraudii* in all other respects, as well as color, except in having the black of the head (which ends with the forehead in *I. giraudii*) extended back to beyond the eye, where it ends in a broken line. In *I. melanocephalus* the whole head down to the upper part of the neck is black.

The accompanying drawing from a sketch made by Miller shows the distribution of black upon the head in the three species.



The measurements of the type are well within the extremes of those of *Icterus giraudii*, which varies considerably in size throughout its extensive range. They show the bird to have been larger with a larger bill than the maximum size reached by *I. melanocephalus*, and altogether larger than *Icterus prosthemelas*, the young of which Ridgway suggests (Birds of N. and Mid. Am., Part II, p. 295, footnote, and in synonymy of *I. prosthemelas*, with a query, p. 271.) *I. gualanensis* might possibly be.

Therefore, *Icterus gualanensis* is, so to speak, an example of *I. giraudii* perfectly typical in every respect except in having the black of head extending somewhat farther back. It comes from a region almost in the middle of the range of *I. giraudii*, so that it can hardly be a geographical form of that species, and the chances seem strongly in favor of its being a "freak." Unfortunately, however, this can not be considered as proved, and *I. gualanensis* must take its place among the number of "species" of tropical American birds that rest on the strength of a single peculiar individual. Cases of this sort are not uncommon among the humming birds and Hartert's method of treating them in his Trochilidæ* seems to me the best that could be devised. He includes and describes each under the genus to which it belongs, but gives it no number. Thus all can be found in his review, and their supposed characters studied, but their inclusion does not augment the number of recognizable species in the genus or the family.

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* **Das Tierreich, Berlin, 1900.**

Many other instances of the kind occur in other groups of birds ; a very striking case being in the genus *Ramphocelus*, where *R. chrysopterus* Boucard, *R. inexpectatus* Rothsch., *R. dunstalli* Rothsch. and *R. festæ* Salvadori, all from Panama, and *R. uropygialis* Bonap. from Guatemala, rest each on the strength of a single peculiar individual. Panama has been so thoroughly overhauled and its tanagers collected in such series, that surely if any of these four supposed species were other than "freaks" or hybrids, additional examples must have turned up.

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PROCEEDINGS

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NEW PLANTS FROM NEVADA.

II.

BY AVEN NELSON.

The small genus *Cleomella* seems to have had little attention in late years. In fact, both collectors and herbarium workers seem to have assumed that nothing more remained to be done. Its species being confined largely to the dry arid interior of our great southwest, which is still to a surprising extent unknown, we may expect many accessions to this small group of species when exploration shall be more complete. My attention was called to the genus by some specimens from Prof. P. B. Kennedy that I found difficult to place. To clear up the difficulty I sought the privilege of examining the sheets found in the herbarium of the Missouri Botanical Garden. I wish here to acknowledge with thanks the courtesy of the Director, Dr. Wm. Trelease, in permitting me to examine this considerable series of specimens. As a result of these studies it seems to me that the following should be characterized. In addition to the species of *Cleomella*, six other new species and a new genus are here described.

Cleomella Hillmani sp. nov.

Erect from a tap-root, bright green and perfectly glabrous throughout; the main axis moderately stout, often simple but usually with a few slender ascending branches from near the base, 1–3 dm. high; leaves long-petioled (the petiole 1 to 4 times as long as the leaflets); leaflets from oblong to elliptic, generally rounded at both ends, sometimes subcordate at apex, 8–14 mm. long; bracts simple (except possibly the lowest), oval to oblong, subcirrhate; sepals short, ovate, long-acuminate; petals golden yellow, narrowly elliptic, about 5 mm. long, much surpassed by the stamens; stipe at length 15 mm. long, usually a little longer than the pedicel; style subulate, 2 mm. or less long; capsule rhomboidal, when fully developed 8 mm. broad, a little less in length; seeds subspherical, 2–3 mm. long, straw-colored, smooth.

I would pronounce this Dr. Watson's *C. longipes grandiflora* if he had not said that the seeds of that were dark colored and rugose or pitted. Mr. W. H. Hillman, while he was professor of botany at the University of Nevada, evidently studied the species very carefully. One of the sheets bears excellent drawings of the floral parts with the note, "possibly a new species." The sheet also bears the note, "common—giving the bright yellow to the hills in May." Nevertheless, of the four specimens at hand, all but one are from Reno, by Hillman, by Cowgill, and by Jones, and distributed as *C. longipes.* Mr. Jones also collected it the same year (1897) at Columbus, Nevada, but distributed it then as *C. obtusifolia.*

Cleomella taurocranos sp. nov.

Freely branched from a stout semiwoody tap-root, the main branches again freely branching from near the base, the branches ascending and the whole forming a subspherical plant 2–3 dm. in diameter; stems pale, nearly smooth, floriferous nearly to the base; leaves short-hispid, pale-green, on petioles as long or longer than the leaflets; leaflets oval to oblong or oblanceolate, 5–10 mm. long; the stipules a small fascicle of bristles; flowers solitary-axillary, small; sepals minute, terminating in a long bristle; petals oblong, 4–5 mm. long, narrowed to a short claw; filaments not exceeding the petals; style about 2 mm. long; the capsule smooth, about 4 mm. high or long, 10 mm. broad; the valves enormously produced laterally, the broadly dome-shaped bases narrowed into the slightly deflexed horns; the fruiting pedicels about 8 mm. long, somewhat exceeding the slenderer recurved stipe; seeds nearly spherical, smooth and pale.

This strongly marked species is allied to *C. obtusifolia* but is at once recognized by its remarkable resemblance to the common tumble weed *Amaranthus albus.* In habit, color, general aspect of leaf and pubescence it is strongly suggestive of that. In its remarkable fruits one can not fail to recognize it. They are strongly suggestive of a bull or bison skull. The broad bases of the valves forming the face, on either side of which are the slightly depressed horns. But one specimen is known to me, Mr. C. R Orcutt's No. 1484, from a clay hill, Colorado Desert, San Diego County, California, June 23, 1888. Type in the Missouri Botanical Garden.

Cleomella obtusifolia pubescens var. nov.

Erect, 2–3 dm. high, branched from the crown of the tap-root, the main branches bearing numerous divaricate branchlets, all striate and more or less roughened with short fragile bristles; leaves very numerous and crowded, somewhat roughened with kinked viscid hairs, the petiole shorter than the small leaflets; the leaflets 5–8 mm. long, oval, ovate or oblanceolate, generally obtuse; the stipules consisting of several rather long flattened more or less persistent bristles; flowers crowded on the branchlets, small; sepals nearly linear, short, aristate; petals oblong, obtuse, 3–4 mm. long, scarcely equalling the somewhat stouter pedicel; style slender, as long as the fruit; fruit densely short-hispid or hirsute, about 3 mm. long, and somewhat broader, the valves short-conical; seeds straw-colored when dry, darker if wet, smooth, 1.5 mm. or less in length.

The type was collected in the Mohave Desert, October 30, 1880, by Dr. Geo. Engelmann who indicated it as a new species and the specimen in the Missouri Bot. Gard. Herb. bears a herbarium name. Some one has penciled upon the sheet the varietal name under which I describe it in full. It is quite possible that it ought to be written *Cleomella pubescens* sp. nov. It differs from *C. obtusifolia* in habit, pubescence, size of plant and flower and in the narrow, simple (not laciniate) sepals. I would place here also the following: C. A. Purpus 5562 and 6044 from southeastern Calif.; A. D. E. Elmer 3629, Lancaster, Calif.; and sheet No. 5617 in the Engelmann Herbarium.

Sphaerostigma senex sp. nov.

A small annual mostly less than 2 dm. high, white hirsute-villous throughout; stem simple, diminishing gradually from the base; leaves from oblong to oval, irregularly dentate or crenate, diminishing uniformly from the base upward, the lower short petioled, 3–5 cm. long, inflorescence a crowded somewhat drooping or secund spike; flowers white; sepals lanceolate, 7–8 mm. long, equalling the calyx tube and about as long as the ovary; petals broadly oval or suborbicular, somewhat exceeding the sepals and about as long as the filaments and style which are subequal; capsule short-villous, straight, linear, 12 mm. or more in length.

Allied to *S. Utahense* but distinguished at once by the white flowers which are quite different in their parts. Only one sheet of specimens known to the writer and this deposited in the herbarium of the University of Nevada. Collected by G. H. True at Pyramid Lake, Washoe Co., June 9, 1903.

Zaushneria argentea sp. nov.

Silvery-gray throughout, the pubescence short and loose, herbaceous nearly or quite to the ground; stems 2–3 dm. high, simple or with paired slender branchlets from some of the axils; leaves lanceolate-oblong or broader, generally widest near the middle and tapering to both ends, only the midvein discernible, rather numerous, besides the paired leaves often some fascicled ones in the axils (these representing the undeveloped branchlets); flowers few, in a short terminal raceme; calyx pubescent, its lobes and the petals homochromous, subequal; petals obovate, deeply bifid; stamens not surpassing the petals and the stigma barely exserted.

If the venation of the leaves has any significance as a diagnostic character (and from the examination of a number of specimens I am inclined to think it is one of the best) this is an excellent species. Following Dr. Greene's division (Pitt. **1**: 25) this falls in with *Z. Californica* in spite of its much broader leaves which would ally it rather with *Z. latifolia.* From both of these species it differs in its included stamens and its loose silvery pubescence. The only specimens I have are from Nevada, No. 278 by Kennedy and Doten, and No. 896 (type) by Kennedy, from Broncho Creek, Washoe Co., August 17, 1904.

Rhamnus Nevadensis sp. nov.

Leaves herbaceous, the young leaves thinly so (not at all coriaceous), elliptic-oblong, mostly obtuse, minutely crenate-serrate, glabrous except for a slight puberulence on the conspicuous midrib and veins beneath, 3–5 cm. long, on relatively short slender petioles; flowers subumbellate; calyx small, its lobes broadly deltoid-triangular, shorter than the tube; petals minute, nearly aborted, broadly obreniform not more than 1 mm. broad, considerably shorter, the apical notch very evident; filament so short that the anther is partly enclosed by the minute petal; fruit when mature about 1 cm. in diameter, subspherical (slightly bilobed), black; seeds 2, hemispherical but somewhat narrowed at base.

This is a close ally of *R. Californicus* Esch. From that, however, it differs very essentially in its non-coriaceous leaves, its short calyx-lobes, its minute petals which are broader than long, its very short stamens, and its seeds which are narrowed at base. The complete and accurate description of *R. Californicus* by Dr. Greene in Fl. Fran., 80, serves to nicely bring out the distinctions between that species and *R. Nevadensis.* I base the species upon two collections; flowering specimens by M. E. Jones, near Reno, June 11, 1897; fruiting specimens by P. B. Kennedy, No. 953, Verdi, September 29, 1904.

Polemonium montrosensis sp. nov.

Root woody, surmounted by a short branched caudex from which spring a few short (8–15 cm. long) stems and several–many much shorter leaves; minutely glandular-puberulent throughout but green and glabrous to the naked eye; leaflets crowded but distinct, 6–12 pairs, broadly ovate, obovate or orbicular, thin and delicately reticulate-veined, rounded-obtuse or sometimes on the same plant subacute; inflorescence cymulose; calyx campanulate; its lobes ovate, about 3 mm. long, equalling the tube; corolla pale blue, campanulate-funnelform; its tube not surpassing the calyx; its lobes suborbicular, entire, as long as the tube; stamens about equalling the corolla lobes; the filaments slender, not dilated, minutely pubescent on the line of insertion only.

Allied to *P. elegans* Greene (Pitt. **3**:305), but of somewhat different habit and its corolla-tube not yellow. That species besides is extremely viscid, even more so than its near relative *I viscosum.* In fact *P. montrosensis* has but little in common with *P. elegans*, *P. viscosum*, and *P. confertum* except leaf-character. In habit and inflorescence it is rather allied to *P. pulchellum*, which name indeed the type specimens bore. No collections are at hand except the following: J. E. Church, June, 97; and S. B. Doten, July, 97; both collections from Mount Rose, Nevada, probably from near the snow bank on the northwestern slope of its volcanic summit. I name Doten's specimens as the type.

Bosleria Nevadensis gen. et sp. nov.

A small viscid-pubescent annual with the branching habit and the leaf aspect of *Physalis*; tap-root breaking up into fibrous roots; floral characters near those of *Solanum*; flowers minute, less than 5 mm. long; calyx cleft nearly to the base into oblong subacute segments; the tube of the corolla very short, its limb rotate-campanulate, with 5 short triangular acute lobes; stamens inserted in the throat of the corolla, a little shorter than the corolla lobes; the filaments relatively broad, not so long as the conspicuous anthers; connivent anthers open terminally by very evident pores but also easily rupture by longitudinal slits; fruit not known; probably a berry.

The above description is a preliminary announcement of this solanaceous plant which seems to represent a very strongly marked genus. It was collected by Mr. G. H. True at Pyramid Lake, Washoe Co., Nevada, June 9, 1903. Prof. Kennedy expects to collect in that region this year and hopes to secure it again in quantity for complete characterization. This is the second monotypic Solanaceous genus that Nevada has furnished, the other being *Oryctes Nevadensis*. I wish to dedicate the genus to my college friend, Mr. Frank C. Bosler, of Carlisle, Pa., whose scholarly interest in scientific work is greatly appreciated, and whose active interest in the development of the West both as regards its educational phases and its physical resources makes such recognition fitting.

Artemisia Kennedyi sp. nov.

Perennial from rootstocks, 6–10 dm. high, the stems erect, simple, 6–10-striate, puberulent; leaves 5–12 cm. long, numerous, mostly lanceolate, the lower more or less dentate and laciniate, the upper and floral entire, acute, all green and glabrous on the upper face with often numerous minute scattered resinous particles, permanently and closely lanate-tomentose on the lower face; panicle narrow or sometimes freely branched below and thus pyramidal, 3–5 dm. long, quite leafy below but the leaves passing into linear bracts above; heads crowded, ovoid, 3–4 mm. high, involucre permanently white-lanate; its bracts involved in the wool, broadly spatulate, the margins and the upper half membranous; flowers liberally sprinkled with large resin particles, 12–20 in number, about equally divided between the slender marginal pistillate ones and the larger hermaphrodite ones of the disk, all fertile.

Mr. C. V. Piper in his article, New and Noteworthy Northwestern Plants (Bull. Torr. Bot. Club, **28**: 42), clears up the confusion as to that maritime species which has been known by the untenable names *A. vulgaris Californica* Besser, and *A. heterophylla* Nutt. To this plant he gives the name *A. Suksdorfii* and definitely limits it to the sea-coast species. That was in fact done by most of the earlier writers as well, but some collectors and writers have confused with it this inland species of the same general habit and, like that, with the leaves glabrous above. The two are, however, readily separated even in the field, for *A. Suksdorfii* always has the pale green, shining, glabrate, slender involucres and the few flowered heads (5–8) while *A. Kennedyi* is with equal uniformity white-lanate on the broad involucre and the heads are many flowered (12–20). In the former the tomentum is close fine and felted, giving to the under side of the leaf a white-glaucous hue in strong contrast to the dark green of the upper face; in the latter the tomentum is looser and easily recognized as wool by the unaided eye. One is a seacoast species; the other of the hills and valleys, and extends into the dry interior.

I take as type Prof. Kennedy's No. 963, Verdi, Washoe Co., Nevada. I place here also the following: Kennedy and Doten, 420, French Meadows, California, August, 1901; Michener and Bioletti, L. Temescal, August, 1891; A. A. Heller, 7195, Pacific Grove, August, 1903; 7209, hills near Los Gatos, September, 1903.

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NEW AMERICAN BEES.

BY T. D. A. COCKERELL.

The described bees of North America, including Central America and the West Indies, number nearly 2,000 species, while Europe has upward of 1,800, not counting the Palæarctic portion of Africa. New species are still frequently found in Europe, while in our own country there are vast areas of which the bees are still practically unknown, and it is probably well within the mark to suppose that we have in reality at least 5,000 species. It is not surprising, therefore, that recent collections are found to contain many undescribed forms, some of which are herewith recorded. It is much regretted that in several cases the collectors' data are not more complete, but there is rapid improvement in this respect, and it is hoped that the time will soon come when we shall be supplied with not only precise localities and dates, but flower-visiting records as well. It will be observed that the species most deficient in these respects come from old collections.

Synhalonia cressoniana sp. nov.

Female.—Length a little over 10 mm.; pubescence in general white, but dense and rather lively ochraceous on thorax above, and tinged with the same color on occiput; abdomen shining black (though beset with numerous minute punctures), with four entire, well-defined, rather narrow white hair-bands, occupying the base of the second segment, and the margins of the second to fourth, those on the third and fourth being purer white, and a little broader; fifth segment with the hair brown-black or very dark chocolate in the middle, white at the sides; sixth with it very dark chocolate; ventral segments 4 and 5 with much short dark red hair about their middle and on hind margin; spurs pale, normal; tegulæ rufous; wings short, clear, nervures ferruginous; hair on inner side of basal joint of hind tarsi ferruginous; facial quadrangle about square; flagellum, except basally, ferruginous beneath. This is one of the *belfragei* group, and is best defined by comparison with other species. It can not be the ♀ of *S. lepida* Cr., because the disc of mesothorax is dull and densely punctured (in *lepida* shining with well-separated punctures, though the anterior part is dull and densely and minutely rugoso-punctate, in complete contrast), and the marginal cell is conspicuously shorter, and more rounded at the end. It has nearly the appearance of *honesta*, so far as regards the thoracic pubescence and abdominal bands; but *honesta*, according to Robertson, is the ♂ of *belfragei*, with which it certainly agrees (differing from *cressoniana*) in having the hind margins of the second and third abdominal segments free from pubescence, the bands not being really marginal. From *S. belfragei* ♀, *cressoniana* differs greatly in its smaller size; in the base of the second abdominal segment having a conspicuous light band (in *belfragei* the base is perfectly black, the second segment having only one band); and in the ferruginous under side of flagellum. From *S. virgata* (*S. belfragei virgata* Ckll.) it differs by its narrower abdomen, with a conspicuous band at base of second segment; the lack of light ventral hair-bands; the rounded apex of marginal cell; the color of the antennæ, etc. From *S. fowleri* Ckll. it differs by the bright ochraceous hair of thorax above; the much redder antennæ; the very distinctly though densely punctured disc of mesothorax (this part in *fowleri* being granular with separated weak punctures); and in having the black parts of the abdomen distinctly punctured and bare, not covered over with black tomentum. The punctation of the abdomen resembles greatly that of *Melissodes spissa* Cresson.

Habitat.—Texas (no other particulars known); from the Cresson collection.

Synhalonia fuscotincta sp. nov.

Female.—Length about 11 mm.; form and appearance of *S. fowleri* Ckll., though narrower, and easily distinguished by the fact that the hind part of the disc of mesothorax, and the scutellum, are covered with dark fuscous hair. The maxillary palpi are 6-jointed, as is normal in the genus. Abdomen with broad white hair-bands at hind margins of segments 2 to 4, and the fifth segment with a white patch on each side. Flagellum black, with only the faintest reddish tinge beneath near apex; vertex without black hair, but one or two hairs over the ocelli have a fuscous stain; mandibles black; pubescence generally white, but of mesothorax, where not fuscous, stained with ochraceous; tegulæ shining piceous; wings rather short, slightly dusky, nervures black; first recurrent nervure joining second submarginal cell at its end; hair of legs mostly white, that on inner side of basal joint of hind tarsi ferruginous, tuft on hind knees pale smoky;

hair of middle of fifth abdominal segment, and of apex, black, much less white at sides of fifth than in *S. fowleri.* Hind spurs straight and normal. From *S. belfragei* it is known among other things by its much smaller size, and the tint of the white abdominal bands, which have not the peculiar bluish tint of *belfragei.*

Habitat.—Oak Creek Canyon, Arizona, 6,000 feet. August. *F. H. Snow* 1997.

Synhalonia gillettei snoviana subsp. nov.

Male.—Smaller, length about 13 mm., antennæ about 10.5 mm.; tarsi ferruginous, the basal joints very dark; basal joint of hind tarsi slender, scarcely broader than second joint; second submarginal cell much shorter, so that its lower side does not greatly exceed the outer. Resembles *S. lepida* Cr., in having the mesothorax shining and punctured, and the mandibles with a very small yellow spot, but is much larger than *lepida*, and otherwise different.

Habitat.—Clark Co., Kansas, 1,962 feet. June. *F. H. Snow* 1185.

Synhalonia lippiæ semilippiæ subsp. nov.

Female.—Hair on inner side of basal joint of hind tarsi dark fuscous with a little ferruginous at extreme base (in *lippiæ* it is entirely dull ferruginous); maxillary palpi 5-jointed, with three long joints and two small apical joints, these two combined a trifle longer than the third; hair of thorax above more ochraceous, and some of the hair on scutellum even stained with fuscous. The maxillary palpi are those of *Xenoglossodes* rather than of *Synhalonia*, and in my tables the insect runs to *Xenoglossodes excurrens*, from which it is easily known by the entirely black flagellum, and the patches of white tomentum at the sides of the fifth abdominal segment.

Habitat.—Oak Creek Canyon, Arizona, 6,000 feet. August. *F. H. Snow* 1989.

Melissodes pecosella sp. nov.

Female.—Length slightly over 10 mm.; facial quadrangle broader than long, but not excessively broad; eyes blue-gray; apical part of mandibles with a yellowish stripe; flagellum very dark reddish beneath; hair of head white and abundant, some black hair on vertex; hair of thorax above ochraceous, black on posterior part of mesothorax and disc of scutellum; tegulæ black, with ochraceous hair; wings dusky, nervures black or nearly black; hair on basal joint of hind tarsi within black or very dark fuscous, at the apex with a reddish tint; scopa of hind legs white, copious; abdomen with three broad bands just as in *pallidicincta*; the two apical segments covered with black hair, a tuft of white on each extreme side of fifth. In most of its characters it agrees with *M. sphæralceæ* Ckll., but the abdomen is rather narrower, with broader hair-bands, and without the characteristic shining appearance of *sphæralceæ*; the hair on inner side of basal joint of hind tarsi is differently colored (ferruginous in *sphæralceæ*); the black hair on the thorax does not extend so far forward, and the hind margin of the first abdominal segment is black (broadly yellowish-white in *sphæralceæ*). It looks like a diminutive *M. pallidicincta*, but has not the broad head of that species. It belongs to the group of *M. intermediella*, *humilior* and *sphæralceæ*. Compared with *M. humilior* Ckll., and *M. intermediella* Ckll., the abdomen is much narrower, with much broader hair-bands; the antennæ also are much darker.

Habitat.—Pecos, New Mexico. *W. P. Cockerell.*

Melissodes pecosella verbesinarum subsp. nov.

Female.—Rather more robust; hair on inner side of basal joint of hind tarsi more decidedly fuscous; flagellum, after the first two joints, *bright ferruginous beneath;* basal band of second abdominal segment broad and very white; hair of thorax in front paler; eyes pale sea-green. Could very easily be taken for an undersized *pallidicincta*, but the much narrower face at once distinguishes it.

Habitat.—Las Cruces, New Mexico, at flowers of *Verbesina encelioides*. September 22. *T. D. A. Cockerell.*

Melissodes nigrosignata pallidisignata subsp. nov.

Female.—Segments 2 to 4 of abdomen almost wholly covered with pale ochraceous hair; hair on outer side of middle tarsi all yellowish-white; spurs pallid. Easily known from *M. grindeliæ* by the entirely light hair of the tegulæ. Maxillary palpi as usual in the genus. This has a very distinct appearance, but seems to be only a variety. The characteristic fulvous and black hair of the hind legs is as in the type. There is a general resemblance to *M. suffusa*.

Habitat.—Oak Creek Canyon, Arizona, 6,000 feet. August. *F. H. Snow* 1985.

Melissodes hortivagans sp. nov.

Male.—Length about 13.5 mm.; black, rather stout; head and thorax with abundant grayish-white pubescence very faintly tinged with ochraceous above, scutellum with some short black hair; eyes pale yellowish-gray; head broad, facial quadrangle not far from square; clypeus (except a small spot on each side), labrum and basal half of mandibles lemon-yellow; apical part of mandibles with a fulvous stripe; antennæ rather long, third joint much longer than second; fourth longest of all, but not as long as the next two together; last joint normal; flagellum wholly bright ferruginous beneath; mesothorax and scutellum shining and well-punctured; tegulæ red, fuscous in front; wings very strongly stained with yellow, stigma ferruginous, nervures dark ferruginous; second submarginal cell much shorter than first or third, oblique but with almost equal sides; first recurrent nervure entering it not much beyond the middle; hair of legs wholly pale, that on inner side of tarsi orange-ferruginous; tarsi ferruginous, as also are the tibiæ at apex and largely on inner side; abdomen with conspicuous but rather narrow entire median (or submedian) white hair-bands on segments 2 to 4, and more or less of a basal band on 2; hind margin of first segment narrowly dull white; fifth and following segments with black hair, but the hair on the apex of fifth is partly light, producing a rather ill-defined light band; spines at sides of fifth and sixth segments well developed; apical plate dark red, with the apical part black, squarely and deeply notched at sides; hair of venter entirely reddish-fuscous, not very dark. In my tables it runs to *M. communis* Cress., but it is easily separated by its larger size, red tegulæ, much less black hair on thorax, and very yellow wings. I at first thought it might be a form of *M. illinoensis* Rob. (which I know only from description), but it is larger, the venation appears to be different, and the wings are strongly yellow; the ornamentation of the abdomen also appears to be different. It must also resemble *M. comptoides* Rob., but the dark hair on scutellum, the light hair on fifth abdominal segment, and other characters are sufficient for separation. In its build, and the banding of the abdomen, it is very much like *M. blakei* Ckll., ♀, but close comparison shows that it can not well be the male of that species.

Habitat.—Garden City, Kansas. August, 1895. *H. W. Menke.* From the University of Kansas, No. 1062.

M. hortivagans var. a.

A series of five males and one female from Morton Co., Kansas, 3,200 feet (*F. H. Snow* 1787, 435, 433, 432, 431, 1788) must be referred to *M. hortivagans* as a variety. The males agree with *hortivagans*, except that they have the stature of *communis*. The female resembles *communis* (taking the Georgia examples as typical), but differs by being more robust, with a much broader abdomen; the legs with less light hair; and more space between the sides of the black patch on the mesothorax and the tegulæ, owing to the fact that the thorax is broader than in *communis*, while the black patch remains the same size. The tegulæ are dark with a narrow reddish margin. Both sexes were taken in June.

Melissodes galvestonensis sp. nov.

Female.—Length about 11 mm.; hair of face and cheeks white, of occiput faintly yellowish; vertex with black hairs, not very numerous; flagellum, after second joint, rather dark ferruginous beneath; mandibles with a broad rufo-fulvous apical stripe; thorax above with dense, short deep, rufo-fulvous hair, a patch on hind middle of mesothorax, and anterior part of scutellum, exposed, shining but strongly punctured; hair of lower part of pleura black in front, white behind, that of the rest of pleura grayish or dull; tegulæ rufous, dark in front; wings dusky, nervures dark fuscous; hair of legs pale but dull; a sooty patch on outer side of middle tibiæ; hair on inner side of basal joint of hind tarsi, and their tibiæ except at extreme base, bright ferruginous, scopa on outside of these joints white or yellowish-white, in the type filled with bright orange pollen; abdomen with an entire but narrow median band on second segment, and basal bands on 2 and 3, of yellowish tomentum; 4 covered with white tomentum, except a median apical transverse area; remaining segments with perfectly black hair, but a good deal of long white hair at extreme sides of fifth; hair of venter dark reddish-fuscous, white at sides; first ventral segment with a pair of broad oblique bright orange bands. In all respects very close to *M. tepaneca* Cr., from which it is known by the black hair of lower part of pleura in front, the much darker flagellum, the entirely white hair of face, the white outer scopa of hind legs, etc. It also nearly agrees with *M. comptoides* Rob., but will be easily known from that by the color of the hair on hind tarsi, and other characters.

Male.—Length about 11 mm.; clypeus lemon yellow with a black spot on each side; mandibles with a large yellow basal spot; antennæ long, third joint a little longer than second, flagellum bright ferruginous beneath; hair of cheeks white, of face rather dull white, of occiput very long and yellowish, of vertex without black; hair of thorax above fulvous, of pleura dull yellowish white; tegulæ red, dark basally; second abdominal segment with a narrow median entire white band; third and fourth segments with extremely broad basal bands of white tomentum, from which spring scattered black bristles; hair of fifth and following segments entirely black; legs with fulvous hair, the short hair on inner side of hind tibiæ fuscous; abdomen broader than in *M. tepaneca* or *M. kallstroemiæ.* Easily known from *tepaneca* by the white (not yellowish-stained) bands of third and fourth abdominal segments, the absence of long white hairs at sides of fifth, the dark hair on inner side of hind tibiæ, and the dark apices of wings. By the color of the abdominal bands it resembles *M. kallstroemiæ* var. *phenacoides*, but it is a stouter insect, and the hair of the hind legs is quite differently colored.

Habitat.—Galveston, Texas. May. *F. H. Snow* 2077 and 2080.

Emphoropsis rugosissima sp. nov.

Female.—Like *E. floridana* (Smith), but a little larger and more robust; wings less darkened, and the second submarginal cell more narrowed above; hair of occiput yellowish-white (black in *floridana*), a tuft of pale hair also on each side of antennæ; clypeus coarsely rugose; extreme sides of fifth abdominal segment with some long glittering white hairs; scopa of hind tarsi shorter and denser, brown-black or very dark purplish-fuscous. The hair of the cheeks and the pleura (except the extreme upper part) is black; that of the thorax above is pale ochraceous, not at all mixed with black.

Habitat.—Nevada (no other particulars known); in coll. Amer. Ent. Society; loaned through Mr. Viereck. The *E. floridana* used for comparison is from Georgia (Cresson collection).

Xenoglossa utahensis sp. nov.

Female.—About 14 mm. long, broad; head, thorax and abdomen entirely rather dark reddish-brown or ferruginous; legs bright ferruginous; pubescence very pale ochraceous, becoming dull white on labrum, cheeks, lower part of pleura, extreme base of abdomen, etc.; abdomen finely punctured, delicately pruinose, tomentose at extreme lateral base of second segment; the tomentum forming a band across third segment, and covering the following ones, quite ochraceous on the last two; scape clear red (rest of antennæ absent in type); clypeus convex, as closely punctured as possible; ocelli large; mandibles bidentate at apex, and with the apical half outside mainly shining orange; maxillary palpi 6-jointed, the second and third very long, the last three small, the last two very minute; tegulæ light ferruginous; wings rather yellowish, nervures ferruginous. The hind tibia and tarsi, with the black dots, the scopa, etc., are exactly as in *X. pruinosa*, but the hind spur is somewhat longer; the inner tooth of the claws is considerably shorter than in *pruinosa*. The apical plate is broad. Manifestly a *Xenoglossa*, notwithstanding the palpi. It is smaller and much duller colored than *X. patricia*.

Habitat.—Utah (no other particulars known); in the Cresson collection. Loaned through Mr. Viereck.

Anthophora porteræ semiflava var. nov.

Male.—Light hair of thorax above, first abdominal segment and occiput yellowish; a long light fulvous tuft behind anterior ocellus. A color variety only, but quite a striking one.

Habitat.—Fort Collins, Colorado. May 28, 1904. *S. A. Johnson.*

Diandrena nothocalaidis sp. nov.

Male.—Length, 8 mm.; head, thorax and abdomen olive-green; legs, antennæ and mandibles black; pubescence long and erect, pale ochraceous dorsally, white on pleura, cheeks and face except at sides, where it is black; a little tuft of black hair above the top of each eye; head large, facial quadrangle much broader than long; cheeks broad; tegulæ shining black; stigma and nervures dull ferruginous, the latter quite light; base of metathorax slightly longitudinally wrinkled. In all respects very close to *D. chalybæa* (Cress.), from the Pacific coast region, and Mr. Viereck suggests that it may be a race of that insect. As the locality is so far from that of *chalybæa*, and my quite considerable series is constant, I treat it as a distinct species. On May 17 my wife took two females, one at flowers of *Nothocalais*, the other at *Antennaria*. The former is dark bluish-green (the abdomen bluer than the thorax), the latter dark olive-green; but they are manifestly conspecific. Length, just over 9 mm., differing from *D. chalybæa* by having the hair of the head all black, except that on the occiput, which is partly pale, with a reddish tint; flagellum entirely black; hair of legs black or sooty; fourth abdominal segment with a rather distinct pale and slightly reddish hair-band; apical fimbria dilute black. The process of labrum is emarginate, and the black facial foveæ extend downwards only to the level of the antennæ, or an almost imperceptible distance beyond.

Habitat.—Boulder, Colorado, numerous at flowers of *Nothocalais*, May 3 and some days after. *T. D. A. and W. P. Cockerell.*

Triepeolus hopkinsi sp. nov.

Male.—Length, about 8.5 mm.; black with pale grayish-creamy markings, hair of face white; eyes light greenish-yellow; mandibles reddish in middle; labrum dark reddish; antennæ black, only the third joint red beneath; stripes on anterior part of mesothorax not joined by pubescence; tegulæ deep coppery-red; scutellum strongly bilobed; lateral teeth black, sharp and rather large; wings a little dusky, nervures piceous; legs (except coxæ) entirely red, spurs red; hair on inner side of basal joint of hind tarsi light orange; abdomen obconical not at all globose, with six uniform entire bands of tomentum; black area on first segment a transverse band, on second pointed laterally; both the elevated ventral fringes entirely creamy-white. Close to *T. occidentalis* Cr., but distinguished by its smaller size, the color of the spurs, the narrow apical plate of the abdomen, and the anterior process of pubescence on sides of second abdominal segment large and directed antero-mesad, in the manner of *T. callopus*, only it is broader than in that insect. The lower part of the pleura, as in *occidentalis*, is extremely densely punctured, but it is only partly bare of pubescence. In many respects it resembles *T. isocomæ* Ckll., but it is easily distinguished by the color of the pubescence of the hind tarsi, the seminude lower part of pleura, etc. It also much resembles *T. callopus* Ckll., and I should think it might be the undescribed male of that insect, were it not for the different color of the spurs, and the much more developed lateral teeth of the scutellum.

Habitat.—Grand Canyon of the Colorado, Arizona, August 3, 1904. (Webb). Received from Mr. Viereck, to whom it has been returned. It is named after Professor Hopkins, who sent it to Mr. Viereck, and who has done good work in the region of the Grand Canyon.

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PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

GENERAL NOTES.

TWO SPECIMENS OF *CHÆTURA CELEBENSIS* (SCLATER).

The United States National Museum has recently received the fifth and sixth known specimens of the great Celebesian swift from Dr. Daniel G. Beebe, a member of the Philippine Scientific Association, who, for some time past, has been engaged in the lumbering business, at Isabella, on the island of Basilan, P. I. This, one of the largest and handsomest, as well as almost the rarest known of the swifts, was described by Sclater (P. Z. S., p. 608, 1865) from two specimens from Manado, N. Celebes; after thirty years it was recorded from the Philippine island of Negros by Mr. W. Eagle Clarke; and, in March, 1895, a third Celebesian specimen was obtained by Messrs. P. and F. Sarasin from Tomohon.

The two skins sent by Dr. Beebe had been well prepared by Senor Ramon de Larracochea, of Isabella, Basilan, and reached the Museum in excellent condition. They are doubtless adult males, as they exceed in size the measurements of the three Celebes specimens ; and both have two white spots on the sides of the forehead. The female figured in Meyer and Wiglesworth (Birds of the Celebes, pl. XII) has these spots reddish brown This species has the upper tail-coverts greatly enlarged and with thickened shafts. The spiny shafts of the rectrices do not extend so far beyond the webs as in *Chætura gigantea* (Temminck).

From the skins (Nos. 192,474–5, U. S. National Museum) I have taken the following measurements: Length, 240, 255; wing, 215, 215; tail, 75, 75; bill from frontal feathers (chord), 8.5, 9.6; bill from anterior margin of nostril, 6.1, 7.1; tarsus, 19, 20; middle toe with claw, 22.5, 22.5 mm. The measurements of Celebesian adults is given as follows: "total length nearly 229 mm., wing 203, tail 71, tarsus 16.5." "A specimen in the Sarasin Collection marked '♀ juv.' (but we can not see any signs of immaturity)," measures: "wing 208 mm., tail 63, tarsus 16, nostril c. 6." (Meyer and Wiglesworth.)

Two American swifts—*Hemiprocne zonaris* (Shaw) and *H. semicollaris* (Saussure)—slightly exceed the dimensions of these Basilan specimens. "*Dagit dagit*," the name given to this species by the Basilan Moro natives, signifies swiftness.—*Edgar A. Mearns.*

THE NAME OF THE PANAMA GREEN HONEY CREEPER.

In Birds of North and Middle America, Part II, Ridgway in treating of the genus *Chlorophanes* allowed but one form, *C. spiza guatemalensis* (Scl.), to the region extending from Panama northward, and placed *C. spiza exsul* Berlepsch questionably in synonomy, saying he had seen no specimens.

Examples of this species, however, from Panama and Chiriqui are much smaller, with much shorter bills, than those from Guatemala, Honduras, Nicaragua, etc., though they do not differ materially in color, and the Panama bird is strictly referable to *C. spiza exsul*. An adult male of this subspecies in my collection from Paramba, northern Ecuador, agrees exactly with birds from Panama and Chiriqui. It seems, therefore, necessary to recognize two forms instead of one for Central America, which with their ranges would be as follows:

Chlorophanes spiza exsul Berl., northern and western Ecuador, north through Panama to Chiriqui.

Chlorophanes spiza guatemalensis (Scl.) Central America from Guatemala south probably to Costa Rica.

Hartert (Novitates Zoologicæ, 5, 1898, p. 481), has already pointed out the characters that distinguish the four geographical races of *Chlorophanes spiza*, and the purpose of the present note is merely to call attention to the fact that the subspecies of the Panama region is *exsul* and not *guatemalensis*.

The differences in size and length of bill in the four recognized races are as follows:

C. spiza spiza, Aripo, Trinidad, No. 15,233, ♂ adult: Wing, 70; tail, 48; tarsus, 18; exposed culmen, 15.5.

C. s. cœrulescens, Rio Lima, Colombia, No. 3898, ♂ adult: Wing, 71; tail, 47; tarsus, 17; exposed culmen, 13.

C. s. guatemalensis, Ceiba, Honduras, No. 10,167, ♂ adult: Wing, 74.5; tail, 50.5; tarsus, 19; exposed culmen, 18.5.

C. s. exsul, Paramba, northern Ecuador, No. 15,210, ♂ adult: Wing, 69; tail, 44; tarsus, 17; exposed culmen, 14.5.

C. s. exsul, Divala, Chiriqui, No. 8199, ♂ adult: Wing, 68; tail, 45; tarsus, 18; exposed culmen, 15. —*Outram Bangs.*

ON THE CORRECT NAME FOR THE MOUNTAIN THRUSH OF THE LESSER ANTILLES.

I have already shown (Smith Miscell. Coll., Quarterly Issue, XLVII, part 2, p. 288, Nov. 8, 1904) that *Turdus montanus* Lafresnaye (1844) is preoccupied by Voigt 1831, Audubon 1838, and Townsend 1839. I was then under the impression that *Margarops albiventris* Lawrence was the next available name, but this does not prove to be the case, as I had overlooked a note by Cabanis (Journ. für Ornith., p. 350, 1874), wherein he states that he had examined the type of Hartlaub's *Turdus apicalis* said to have been from Senegal, and that it was without much doubt this species. Turning to Hartlaub's description in his System Ornith. West-africa's, p. 76, 1857, where he credits the specific name to Lichtenstein (*Crateropus apicalis*, Nomencl. Av., p. 27, 1854—nomen nudum), we find a good diagnosis of the present species. If this view is the correct one, the species should be known as *Allenia apicalis*.—*J. H. Riley, Washington, D. C.*

NOTE ON *ARABIS PEDICELLATA* A. NELSON.*

My attention has been called to this species again by coming across a very close duplicate of the type in Mr. C. F. Baker's recently distributed specimens from Nevada, No. 991. This on Dr. Greene's determination has gone out as *Parrya Menziesii* Greene. On looking up that species I find that *Arabis pedicellata* is quite specifically distinct from *Parrya Menziesii*, though undoubtedly both should be referred to the same genus. My first thought was that *Arabis pedicellata* would have to become *Parrya pedicellata*. Accordingly the distinction between the two genera came up for consideration. Between *Parrya* proper and *Arabis* the distinctions may be fairly well drawn, though they are no more pronounced than between the sections of *Arabis* as that genus is now constituted. On the other hand, the *Phaenicaulis* section of *Parrya* and some of the species of *Arabis* are very closely related. The type species, *P. Menziesii*, of this section has in turn been referred to a number of different genera at different times, even by the same author. Nuttall intentionally and thoughtfully separated it from *Parrya* (T. & G. Fl. N. A. **1** : 89). Dr. Greene coincides in this opinion (Bull. Torr. Bot. Club **13** : 143) at first, but later remands it to *Parrya* (Fl. Fr. 253), while Dr. Watson refers it to *Cheiranthus.*

All these translocations seem to have had for their *raison d'être* the reputed peculiar habit and the broad straight flat ensiform pods. But in the recent Nevadan specimens, cited above, these characteristics break down (see description of *A. pedicellata*, l. c.— a description which seems to need no change). The characters given below apply with equal force to the *Phaenicaulis* section of *Parrya* and to many typical species of *Arabis.*

Stems either erect or decumbent at base, from a woody caudex, leafy-bracteate : leaves more or less clustered at base, entire : the cauline auricled or sagittate at base : sepals erect, more or less gibbous at base : petals clawed, with a patulous blade, exceeding the sepals : stamens 6, free and unappendaged : pods linear or broader, nearly flat, more or less 1-nerved ; replum not thickened ; stigma entire : seeds flattened, orbicular or elliptic, winged or wingless ; the cotyledons accumbent.

I am unable to find in literature or in the specimens at hand any character to justify retaining *Phaenicaulis* either as a distinct genus or as a section of *Parrya*. As suggested in Proc. Biol. Soc. Wash., l. c., there are some points in which a closer approach is made to *Streptanthus.*

Arabis Menziesii (Hook.) comb. nov. *Hesperis Menziesii* Hook. Fl. Bor. Am. **1** : 60 ; *Phaenicaulis cheiranthoides* Nutt. in T. & G. Fl. N. A. **1** : 89.

—*Aven Nelson.*

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* Proc. Biol. Soc. Wash., **17** : 91.

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PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

GENERAL NOTES.

NOTE ON THE NAME *HENDERSONIA*.

In Smithsonian Miscellaneous Collections, Quarterly issue, No. 1590, p. 187, July 1, 1905, I proposed the name *Hendersonia*, for a remarkable new genus of *Urocoptidæ* from Mexico. I am now informed that in a publication by Wagner (Vienna, 1905) entitled 'Helicineen Studien,' which has not yet reached our library, the same name has been proposed for our well known *Helicina occulta* Say.

I would therefore modify the name proposed by me into **Hendersoniella** in order to avoid the conflict which renders the later use of the name impracticable.—*William Healey Dall.*

NOTE ON THE EARLIEST USE OF THE GENERIC NAME *PURPURA* IN BINOMIAL NOMENCLATURE.

The name *Purpura* from early times was applied by the ancients to the mollusk from which the Tyrian purple dye was derived. This is definitely known to be the *Murex trunculus* of Linné. In harmony with this tradition the name *Purpura* was used in general for the *Muricidæ* by prelinnean writers on conchology. Much later it became known that certain other gastropods yielded a purple dye, and these were colloquially united with the murices under the name *Purpura*. The first printed work treating of shells was the *De Purpuræ* of Fabius Colonna in which he figures the *Murex trunculus*. The earliest use in binomial nomenclature of the name *Purpura* is by T. Martyn in the Universal Conchologist, Vol. I, fig. 66, 1784, for the shell later called by Gmelin *Murex foliatus*, and more recently *Cerostoma foliatum* by Carpenter. It is in harmony with tradition a muricoid; and the same view was taken by Bolten in 1798 who began his list of *Purpura* with *Murex trunculus*. As *P. foliata* is the only species of *Purpura* occurring in the first two volumes of Martyn, it must necessarily typify the group bearing this ancient designation. The shells ordinarily catalogued under this generic name were not separated by Lamarck until 1799, from the heterogeneous Linnean murices and buccina.

—*William Healey Dall.*

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PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

SUGGESTIONS FOR THE NOMENCLATURE OF THE CRANIAL LENGTH MEASUREMENTS AND OF THE CHEEK-TEETH OF MAMMALS.

BY OLDFIELD THOMAS.

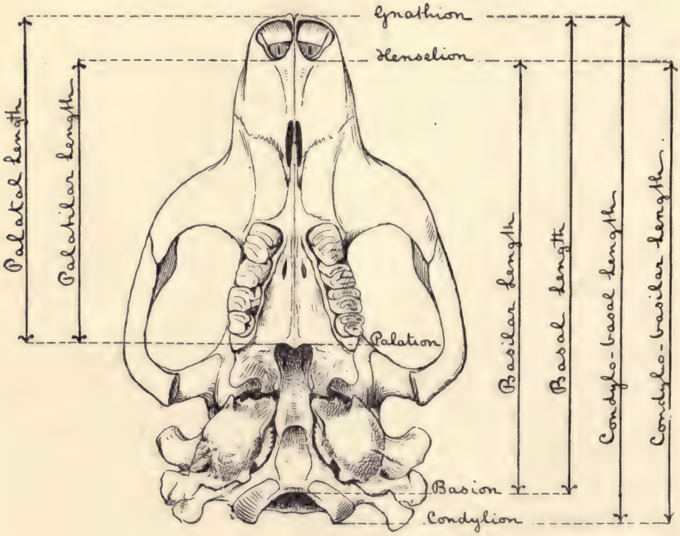
Although various reasons prevent the general success of such a wholesale revolution in scientific terms as is described in Wilder and Gage's Anatomical Technology (1882), where the many arguments in favor of accurate nomenclature are admirably put forth, yet in various corners of science improvements can be suggested which, if the workers are willing and in touch with each other, may be a real help in reducing the inconvenience of the loose or clumsy terminology commonly in vogue.

Two such suggestions, due largely to the instigation of Mr. Gerrit S. Miller, Jr., form the subject of the present paper.

I. LENGTH MEASUREMENTS OF THE SKULL AND PALATE.

In giving the length measurement of the skull, not only do different authors at present use different measurements in describing the skulls of similar or related animals, but in doing so they designate these measurements by terms of which it is often difficult or impossible to make out the exact meaning. Such a name as " basal length " has I believe been used by one person or another for almost every one of the measurements to be here-after defined, and readers are expected to know by heart everything that the user has ever written on the subject, footnotes and all, in order to understand what is meant by the particular term employed. Such a state of things has many inconveniences, and it is hoped the present communication, if it meets with the approval of other workers on the subject, may do a little toward putting an end to the existing confusion.

As long ago as 1894,* by agreeing with Dr. Nehring for the definition of the terms basal and basilar in our own future writings, I made a first step in this direction, and the present is an amplification of the principle then adopted.


Gnathion
Henselion
Palation
Basion
Condylion
Palatal length
Palatilar length
Basilar length
Basal length
Condylo-basal length
Condylo-basilar length

All the difficulty has arisen from the fact that both at the anterior and the posterior ends of the skull there are two measurement points, so that there are four different ways in which the basal length of the skull may be taken, and under that name some authors have adopted nearly every one of them.

It is clear that if a definite name be given to each one of the four measurements, authors, by using these names, will be enabled to give the measurements they fancy without causing confusion in the minds of their readers as to their exact meaning.

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* **Ann. & Mag. Nat. Hist., Ser. 6, XIII, p. 203.**

The different points are:

Anteriorly: 1. The Gnathion, the most anterior point of the premaxillæ, on or near the middle line.

2. The Henselion, the back of the alveolus of either of the median incisors, the point used and defined by Prof. Hensel in his craniological work.

Posteriorly: 3. The Basion, a point in the middle line of the hinder edge of the basioccipital margin of the foramen magnum.

4. The Condylion, the most posterior point of the articular surface of either condyle.

A fifth measuring point to be referred to below is the Palation, the most anterior point of the hinder edge of the bony palate, whether in the middle line or on either side of a median spine.

Now using these words for the purposes of definition, I would propose, as shown in the diagram, the following names for the four measurements that may be taken between the points above defined:—

1. Basal length, the distance from Basion to Gnathion.
2. Basilar length, the distance from Basion to Henselion.
3. Condylo-basal length, the distance from Condylion to Gnathion.
4. Condylo-basilar length, the distance from Condylion to Henselion.

In addition there may be:

5. Greatest length, to be taken not further divergent from the middle line than either condylion. A long diagonal to a projecting bulla or paroccipital process would thus be barred. If however the words "between uprights" be added the measurement would be between two vertical planes pressed respectively against the anterior and posterior ends of the skull at right angles to its middle line.
6. Upper length, from tip of nasals to hinder edge of occipital ridge in middle line.

The difference between the words basal and basilar, which at first seemed trivial and indistinctive, is founded on the use of the English word basal by the older writers, such as Flower and others, who used the measurement from the gnathion; while basilar is an adaptation of the German of Hensel and his school, who used the "*basilar-länge*" from the henselion. These names again, combined with condylo-, readily express the points which are used by those who like to adopt the condylion as a posterior measuring point.

But further, the association of the ending "al" with a measurement from the gnathion, and "ilar" with one from the henselion, if once defined and fixed, may be utilized in a second case of similar character.

The length of the bony palate is a measurement given by all careful describers, but the anterior measuring point used is again either the gnathion or henselion, doubt as to which is being used often nullifying the value of the measurement altogether.* To avoid this doubt I would suggest, exactly as in the other case, that the name of the measurement from the gnathion should end in "al" and that from the henselion in "ilar." We should then have:

PALATAL LENGTH, the distance from gnathion to palation.

PALATILAR LENGTH, the distance from henselion to palation.

The indeterminate "palate length" would then be dropped altogether.

II. THE NAMES OF THE CHEEK-TEETH OF MAMMALS.

Although the cheek-teeth of mammals, the molars and premolars, have been studied and written about ever since the birth of zoology, no uniform system of naming them has been evolved and there is the greatest divergence between the usage of different workers on the subject. In old days all were called molars or grinders; then the premolars were distinguished from the true molars (although French zoologists, Winge in Denmark, and Ameghino in Argentina, continued to use a continuous notation for the two sets of teeth combined) and the usual habit among zoologists in general was to speak of them individually as "second premolar," "third molar," and so on. Even here, however, an important difference cropped up owing to Hensel and his school in Germany numbering the premolars from behind forwards, while naturalists of other nations counted from before backwards, as with the incisors and molars, a difference often productive of fatal confusion.

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* I may explain that in my own descriptions the palate of any given animal has always been measured from the same anterior point, gnathion or henselion, as the skull itself, this latter being indicated by the use of the words basal or basilar.

Of late years, however, partly owing to an increasing concensus of opinion that the seven cheek-teeth of Placentals, four premolars and three molars, are serially and individually homologous with the seven of Marsupials, formerly reckoned as three premolars and four molars, many naturalists have again begun to think that a continuous numeration might be the best one.

But the difficulties in the way of its adoption are very great, largely owing to the absence of any convenient and suitable word in English less clumsy than "cheek-tooth," to express a tooth of the combined premolar and molar series. To speak of the "first cheek-tooth" or of the "predecessor to the fourth cheek-tooth" would be so retrogressive a step that I am sure no one would adopt it. But if instead of trying to find a word for the series combined with a numeral to show the position, we were to have a name for each tooth, we should get something of the immense convenience we have all realized in having definite names for the canine and the carnassial teeth, the latter name being found of value in spite of the fact that the upper and lower carnassials are not homologous with each other. Such names might be made from the positions of the teeth if their meanings were not so obtrusive as to confuse the minds of persons who do not readily understand how a tooth should be called "the second" or "secundus" when it is actually the most anterior of the series.

Now it fortunately happens that while the Latin terms "primus," "secundus," etc., express the serial positions too clearly for the convenience of weak minds, Latinized Greek terms have just about the right amount of unfamiliarity which would enable them to be used as names without their serial origin being too much insisted on. Moreover, their construction is similar to the process we all use in making generic names, and so far as I know they have never been previously utilized in zoology.

Then, after Latinizing the Greek ordinal terms πρωτος, etc. for the cheek-teeth of the upper jaw, the same modification as is already used in cusp nomenclature might be adopted for those of the mandible.

We should thus have, counting from before backwards:

	UPPER JAW.	LOWER JAW.
Cheek-tooth 1	Protus	Protid
" 2	Deuterus	Deuterid
" 3	Tritus	Tritid
" 4	Tetartus	Tetartid
" 5	Pemptus	Pemptid
" 6	Hectus	Hectid
" 7	Hebdomus	Hebdomid

To avoid any doubt, I would expressly allocate these names to the permanent teeth of placentals, leaving the names of the marsupial teeth to be settled in accordance with their placental homologies.

For the milk teeth a further modification would be available by prefixing the syllable Pro- to the names of the respective permanent teeth. We could thus for example in the case of a third lower milk premolar call it the protritid, and so use one word instead of four.

Of course I have no supposition that this system would ever be frequently or generally used, but I am convinced that in many special cases, and particularly in such descriptions and catalogues of isolated teeth as paleontologists often have to give, it might result in considerable convenience and saving of space.

VOL. XVIII, PP. 189-190 JULY 12, 1905

PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

GENERAL NOTES.

NOTE ON THE NAME *HENDERSONIA*.

In Smithsonian Miscellaneous Collections, Quarterly issue, No. 1590, p. 187, July 1, 1905, I proposed the name *Hendersonia*, for a remarkable new genus of *Urocoptidæ* from Mexico. I am now informed that in a publication by Wagner (Vienna, 1905) entitled 'Helicineen Studien,' which has not yet reached our library, the same name has been proposed for our well known *Helicina occulta* Say.

I would therefore modify the name proposed by me into **Hendersoniella** in order to avoid the conflict which renders the later use of the name impracticable.—*William Healey Dall.*

NOTE ON THE EARLIEST USE OF THE GENERIC NAME *PURPURA* IN BINOMIAL NOMENCLATURE.

The name *Purpura* from early times was applied by the ancients to the mollusk from which the Tyrian purple dye was derived. This is definitely known to be the *Murex trunculus* of Linné. In harmony with this tradition the name *Purpura* was used in general for the *Muricidæ* by prelinnean writers on conchology. Much later it became known that certain other gastropods yielded a purple dye, and these were colloquially united with the murices under the name *Purpura.* The first printed work treating of shells was the *De Purpuræ* of Fabius Colonna in which he figures the *Murex trunculus.* The earliest use in binomial nomenclature of the name *Purpura* is by T. Martyn in the Universal Conchologist, Vol. I, fig. 66, 1784, for the shell later called by Gmelin *Murex foliatus*, and more recently *Cerostoma foliatum* by Carpenter. It is in harmony with tradition a muricoid; and the same view was taken by Bolten in 1798 who began his list of *Purpura* with *Murex trunculus.* As *P. foliata* is the only species of *Purpura* occurring in the first two volumes of Martyn, it must necessarily typify the group bearing this ancient designation. The shells ordinarily catalogued under this generic name were not separated by Lamarck until 1799, from the heterogeneous Linnean murices and buccina.

—*William Healey Dall.*

VOL. XVIII, PP. 197-200 SEPTEMBER 2, 1905

PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

A NEW TOBACCO THRIPS.

BY W. E. HINDS.

During 1904 frequent complaints were received by the Bureau of Entomology of a thrips doing damage to shade-grown tobacco in Florida, producing an injury termed "white vein." As the tobacco is being grown in order to obtain the highest grade of wrapper leaf, the injury produces a considerable decrease in the value of the product.

About eighteen years ago Lindeman described a species of thrips which was doing great damage to tobacco grown in Bessarabia, giving it the name *Thrips tabaci*. This species has since been found scattered over Europe, England, and the United States, but, peculiar as it may seem, there is no recoord of its having attacked tobacco in this country, though the list of its food plants is large. Thus, the "tobacco thrips" of Lindeman has come to be generally known as the "onion thrips" in the United States. No confusion will arise in this country, therefore, if we apply the common name "tobacco thrips" to the new species here described.

The specimens from which this description has been made were collected and forwarded by Mr. W. A. Hooker, who has been studying the problem of controlling this pest.

Euthrips nicotianæ sp. nov.

Average length, 1.05 mm. (0.95 to 1.13 mm.); average breadth at middle of abdomen, 0.27 mm. (0.225 to 0.285 mm.). General color of head and thorax light brown or tawny yellow-brown; abdomen dark brown.

Head about one and one-half times as wide as long, frequently slightly retracted under anterior margin of prothorax; occiput transversely wrinkled, posterior margin strongly thickened and darker in color; anterior margin slightly bisinuate; cheeks approximately straight and parallel. Eyes dark red in color, not protruding, occupying together fully one-half the width of the front of the head and being one-half as long as the head; margins around eyes pale yellow in color; surface of eyes finely facetted and slightly pilose; three ocelli present, well separated, posterior ones contiguous with yellow borders to eyes, pale yellow in color and margined inwardly with pale orange crescents; one moderately stout, dark spine in front of each posterior ocellus; postocular spines weak and inconspicuous. Mouth cone reaching nearly to posterior edge of the prosternum, tapering abruptly; maxillary palpi slender, three segmented. Antennæ inserted slightly below front margin, approximate at base, about two and one-half times as long as the head and approximately equal to breadth of mesothorax; relative length of segments:*

1	2	3	4	5	6	7	8
6.2	11.4	13.5	13.6	12.2	16.2	3.0	4.5

Segment 1 is rounded, three-fourths as long as broad; 2 is as broad as 1; following segments about three-fourths as thick; segments 3 to 6 are constricted at bases, becoming more stout successively. Color of segments 1 and 2 uniform light brown; 3 to 5 pale yellow at bases, shading to brown at outer ends, each succeeding segment from 3 to 6 becoming darker in color; 6 to 8 are dark brown. Spines upon segments 2 to 5 are of medium size, but not very conspicuous. Color of head varying from gray-brown to yellow-brown.

Prothorax about five-ninths as long as broad and slightly longer than the head; sides rounded, slightly wider at hind than at fore angles; one stout spine at each anterior, and two stouter spines of equal size at each posterior angle; anterior marginal pair of spines about one-half as long as those at front angles; usual row of five spines on each side of hind margin, of which number four is equal in strength to those on the front margin. Mesothorax nearly one and one-third times as wide as the prothorax, broadest posteriorly, sides curving outward; mesonotum without conspicuous spines, posterior margin forming an obtuse angle in middle. Metathorax slightly narrower than mesothorax, sides nearly parallel, broader than prothorax at posterior edge; metanotum bears two pairs of spines at front edge, the inner pair being as strong as those at front angles of prothorax. Wings present (probably reduced at some season of year), average length about 0.68 mm., not reaching to the tip of the abdomen, breadth equal to about one-thirteenth of their length; fore wing has two longitudinal veins, each bearing stout spines set at regular intervals; fore wings shaded ash-gray, hind wings gray only along basal three-fourths of mid-vein; spines on wing veins dark brown and conspicuous; costa bears 19 to 24 spines; fore vein, 13 to 18; hind vein, 10 to 12; scale, 5; interior of scale, 1; fringe of hairs on costa of fore wing quite heavy, in length exceeding the breadth of the wing. Legs of medium length, lighter than body in color, pale yellow, shaded more or less with brown on upper side at middle of femora and tibiæ; a pair of stout brown spines at inside of tip of each tibia, small brown spines scattered along femora and tibiæ; spines standing in two rows on inner side of hind tibiæ are weak and only about four in each row.

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*The number of the segment is given above the line and below it the number of spaces covered upon an eye-piece micrometer by an average of the segments of 10 antennæ.

Abdomen nearly cylindrical to eighth segment, then tapering abruptly to an acute tip; color uniformly dark brown; a still darker-colored narrow chitinous thickening extends across dorsal side of segments 2 to 8 near anterior edge. Three or four quite stout and rather conspicuous dark brown spines stand at each side of dorsal plates on 2 to 8; six rather prominent spines stand in a row on posterior edge of ventral plates 2 to 7; terminal spines stout and prominent; tenth segment split open along dorsal median line.

Described from 10 females.

Male specimens of this species have not been found.

Three cotypes (three slides) deposited in the U. S. National Museum. Type No. 8434, U. S. N. M. Three cotypes (three slides) deposited at the Massachusetts Agricultural College. Four cotypes (two slides) retained.

Habitat.—Quincy, Fla.

Food plants.—Tobacco, oats, shepherd's purse, *Brassica* sp.

VOL. XVIII, PP. 201-202 SEPTEMBER 2, 1905

PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

A NEW PROSERPINOID LAND SHELL FROM BRAZIL.

BY WILLIAM HEALEY DALL.

The genus *Cyane* H. Adams, described in 1870, is said to differ from ordinary *Proserpina* by having the columella truncate and no parietal or palatal laminæ. It has not been figured and I have not seen specimens, but from the characters of a shell about to be described, it may be merely, as Tryon concluded, a subordinate subdivision of *Proserpina*.

From the calcareous banks of the arroyo of the Rio Chico at Paraguassú, State of Bahia, Doctor Orville A. Derby obtained a small apparently subfossil land shell, which has been submitted to me for examination by Doctor H. von Ihering, Director of the Museu Paulista, at Sao Paulo, Brazil.

The specimen is of very much the same size and habit as *Proserpina depressa* Orbigny, from Cuba, in which the columella, if it may be so called, descends in an even curve from the parietal wall until it merges imperceptibly in the basal margin of the aperture and bears at right angles to itself a small lamella, which often lags behind so as to be but little visible from in front of the aperture. But in the case of the shell from Brazil the lamella is prominent and strong and the curve of the columella is taken up by it parallel to the base of the aperture and so near the basal margin that only a narrow notch exists between them, giving the effect of an oblique truncation of the pillar. This leads to the surmise, in the absence of a figure or full diagnosis of *Cyane*, that the chief character upon which Adams based his genus may have been of a like nature, in which case it could hardly be accounted of generic value.

From *Cyane*, however, the present species differs in preserving a parietal lamella; and, as Bland, Pfeiffer and others have considered differences of the arrangement and number of the lamellæ of the aperture as sufficient characters for subdivisions of the genus, the Brazilian shell might be regarded as constituting the type of a section or subdivision with those characters, which might be called *Staffola*.

Proserpina (Staffola) derbyi sp. nov.

Shell small, depressed, pale yellowish, when fresh probably polished, with an axial sculpture of fine, non-punctate, sharply incised striæ nearly parallel to the incremental lines, but visible only under considerable magnification; spire depressed, domelike, the sutures obscure, the protoconch large, followed by five whorls; base flattish, imperforate, not excavated in the center; aperture semilunar, outer lip thin, sharp, advancing slightly from the suture and slightly excavated just before it joins the pillar; parietal wall with a single lamella about one-third of the way from the pillar to the suture; periphery of the shell inflatedly rounded; the armature of the pillar has been already described; height of shell, 2.5; max. diam., 5.0; min. diam., 4.0 mm.

The shell is in such a condition that it might be either a Pleistocene fossil or a "dead" shell washed from a higher level and stranded by falling water in the creek.

The Proserpinidæ have hitherto been known only from the Antilles, Mexico, middle America and the shores adjacent to the Caribbean, except in the case of *Cyane blandiana* Adams, which was described from Eastern Peru. The presence of a species in the State of Bahia is therefore a very interesting addition to the knowledge of the geographical distribution of members of this group. Even if fossil, it carries the range 1,000 miles to the south and east, and adds weight to the connection which has been already insisted on between the Antillean fauna and that of the Eastern portion of South America south of the Amazonas.

VOL. XVIII, PP. 203-204 SEPTEMBER 2, 1905

PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

A NEW CHITON FROM THE NEW ENGLAND COAST.

BY WILLIAM HEALEY DALL.

Mr. Dwight Blaney of Boston, summering at Bar Harbor, Maine, has interested himself in the marine invertebrates and engaged energetically in dredging. Among some mollusks sent to the writer for examination was a handsome chiton which, after careful study and comparison with American and North European species, appears to be undescribed.

The number of species of chiton on the New England coast is very small and, with the exception of one deep-sea species, none has been described during the last quarter century. It is therefore exceptionally interesting to know of the presence of a new species in this district. The species is somewhat intermediate in its characters between *Tonicella* and *Trachydermon*, with a leaning toward the former, and seems most nearly related to *T. marmorea* Fabricius, from which, however, it is abundantly distinct.

Tonicella blaneyi sp. nov.

Shell of a deep rose-color, with fine white lineations and reticular markings; girdle brown, apparently naked, but exhibiting under high magnification a microscopic granulation with a row of small spinules at the extreme edge, as in *T. marmorea*; the coloration of the valves outside, in the type specimen is fairly uniform but probably more or less variable among individuals; the valves inside are of a deep rose-pink, paler toward the edges; surface minutely more or less quincuncially punctate, but this is visible only when magnified; the sculpture consists of (on the midvalves usually three) radial riblets with a tendency to bifurcate or break up into segments distally; there are no distinctly marked areas on the midvalves, but the part of the valves which bears what in many chitons are called the lateral areas, in this species carries two or three, sometimes bifurcate, thread-like ribs which are flattened above and rarely reach the mucro of the valve, being usually evanescent dorsally; there are also more or less deeply impressed lines of growth; the median part of the valves is nearly smooth except for the microscopic punctation; anterior valve semicircular, with numerous, more or less irregular, radial riblets that resemble those on the midvalves; the eaves are conspicuously spongy; the insertion plates are blunt, crenulate at the edge, but not radially striate; the anterior valve in the type has 10, but would seem normally to have either 9 or 11 slits, as one seems missing or in excess, on one side; the midvalves have one slit on each side, their anterior lamellæ are nearly continuous across the dorsal sinus; the posterior valve is small without a mucro, the incremental lines strong, the ribbing obsolete or nearly so; in the type, while there is not a posterior sinus like that of *Chætopleura*, there is a certain flattening and the insertion plates bordering this part of the valve are poorly developed; there are 7–9 slits between which the distal edges of the plates are more or less irregularly crenate; in the dried specimen the muzzle has a prominent " veil " or tegumentary margin; the ctenidia number about 15 on each side and extend forward on each side of the foot to the fourth valve; length over all (dry), 13 mm.; width, 8 mm.; dorsal angle, 120°.

Dredged in 20 fathoms off Ironbound Island, Frenchman's Bay, near Mt. Desert Island, Maine.

From *Trachydermon ruber*, *Tonicella marmorea* and similar species, this form can be at once distinguished by the ribbing. If the type specimen be characteristic in its color, the pattern and hue would be equally distinctive. In *T. ruber* the girdle is pubescent and particolored, in *T. marmorea* and the present species it is of a uniform brown. The type specimen has been generously donated to the U. S. National Museum.

VOL. XVIII, PP. 205-206 SEPTEMBER 2, 1905

PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

A NEW CLOAK-FERN FROM MEXICO.

BY WILLIAM R. MAXON.

By permission of the Secretary of the Smithsonian Institution.

Among the plants collected in Mexico by Mr. C. G. Pringle in 1904 is the following undescribed fern which we regard as one of the most clearly marked species discovered in recent years:

Notholaena bryopoda sp. nov.

A plant of medium size, the rigid fronds 8 to 20 cm. long, borne rather closely from a fasciculate bulbiform rhizome thickly covered by bristly ferruginous chaff with entire margins and with a darker median line: stipe 3 to 8 cm. long, seal brown, sinuose, slightly furrowed above, scantily clothed with deciduous narrow attenuate chaff somewhat darker than that of the rhizome: lamina 5 to 12 cm. long, lanceolate, coriaceous, for the most part only bipinnate, both primary and secondary rachises channelled upon the upper surface; pinnae lanceolate, exactly alternate throughout, dull greenish and devoid of glandular or ceraceous covering upon the upper surface, the larger ones about 2.5 cm. long with seven or eight pairs of mainly simple narrowly oblong sessile pinnulae, only the two or three lowermost pinnulae being pinnate with one or two pairs of small narrow sessile segments; margins strongly revolute, partially concealing the blackish sporangia at maturity by a dense coating of pale yellowish ceraceous powder, subsequently somewhat reflexed.

Type in the U. S. National Herbarium, sheet No. 461,305; collected from "chalky banks at base of Sierra de San Lazaro, altitude 7,500 ft., State of Nuevo Leon, Mexico; November 7, 1904; C. G. Pringle, No. 8802." Known only from the type collection.

Notholaena bryopoda is without any near Mexican allies. From *N. Pringlei* Davenp.,* the only species with which it might be confused, it differs in nearly every essential feature; especially in the peculiar character and vestiture of the rhizome, in the entire absence of any ceraceous covering upon the upper surface, and in the larger and elongate segments. Its most distinctive characters lie in the greatly enlarged and clustered rootstocks, which with their thick tufts of ferruginous chaff closely simulate those of *N. sinuata* (Sw.) Kaulf. The likeness of these to certain tufted dicranoid mosses has suggested the specific name here employed.

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* Bull. Torrey Club **13** : 132. *pl. 58.* 1886.

Vol. XVIII, pp. 207-210 September 2, 1905

PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

DESCRIPTIONS OF SOME NEW GENERA OF TYRANNIDÆ, PIPRIDÆ, AND COTINGIDÆ.

BY ROBERT RIDGWAY.

By permission of the Secretary of the Smithsonian Institution.

Aphanotriccus gen. nov. (*Tryannidæ.*)

Similar to *Myiobius* Gray but outermost primaries longer (the tenth equal to first instead of much shorter than secondaries, the ninth not shorter than fifth), rictal bristles weaker (not reaching to tip of bill), tail much longer than distance from bend of wing to end of distal secondaries, and without yellow on crown nor rump.

Type, Myiobius capitalis Salvin = *Aphanotriccus capitalis.*

(**'Αφανής**, unseen, obscure; ***τρίκκος***, a small bird.)

Terenotriccus gen. nov. (*Tyrannidæ.*)

In form somewhat like *Myiobius* Gray, but second phalanx of middle toe partly adherent to outer toe, lateral toes relatively much shorter, tail shorter than distance from bend of wing to end of distal secondaries, and style of coloration very different (under parts uniform cinnamon-buff, tail rufous-buff, and no yellow on rump nor crown.)

Type, Myiobius fulvigularis Salvin and Godman.

(**Τέρενος**, soft, delicate; ***τρίκκος***, a small bird.)

Species: Terenotriccus fulvigularis (Salvin and Godman), *Terenotriccus erythrurus* (Cabanis).

Myiotriccus gen. nov. (*Tryannidæ.*)

Similar to *Aphanotriccus* in those structural characters which separate the latter from *Myiobius*, but outermost primaries longer (tenth equal to second or third, ninth longer than fifth or sixth), tail much shorter than wing to end of distal secondaries, a yellow spot on crown and rump (as in *Myiobius*), and tail at least partly rufous.

Type, Tyrannula phœnicura Sclater.

(**Μυῖα**, a fly; ***τρίκκος***, a small bird.)

Species: Myiotriccus ornatus (Lafresnaye), *Myiotriccus stellatus* (Cabanis), *Myiotriccus phœnicurus* (Sclater), *Myiotriccus aureiventris* (Sclater).

Atalotriccus gen. nov. (*Tyrannidæ.*)

Similar to *Colopteryx* Ridgway (ex *Colopterus* Cabanis, preoccupied), but head without crest, four, instead of three, outer primaries greatly reduced in size (the reduction excessive and the feathers very narrow and acuminate instead of normal in form), and bill much narrower.

Type, Colopterus pilaris Cabanis = *Atalotriccus pilaris.*

(**'Αταλός**, tender, delicate; ***τρίκκος***, a small bird.)

Placostomus gen. nov. (*Tyrannidæ.*)

Similar to *Platyrinchus* Desmarest, but latero-frontal feathers and feathers of chin with conspicuous bristly tips; tarsi and toes much more slender, the basal phalanx of middle toe wholly united to inner toe, outermost (tenth) primary relatively much longer (longer than fifth instead of not longer than second); tail much smaller (only about one-fourth, instead of nearly one-half, as long as wing).

Type, Platyrhynchus superciliaris Lawrence.

(Πλάξ, a broad surface; *στόμα*, mouth.)

Species: Placostomus superciliaris (Lawrence), *Placostomus coronatus* (Sclater).

Cnemarchus gen. nov. (*Tyrannidæ.*)

Somewhat like *Myiotheretes* Reichenbach, but tarsus relatively much shorter (much less than twice as long as the relatively shorter middle toe, with claw); claw of hallux not longer than its digit; wing only moderately lengthened, the longer primaries exceeding secondaries by much less than twice the length of tarsus and much less than one-third (instead of nearly one-half) the total length of wing; outermost (tenth) primary shorter than sixth (instead of equalling or exceeding ninth) and not attenuated at tip; tail more than two-thirds as long as wing, even (instead of emarginate), extensively rufous in color; bristly tips of latero-frontal feathers well developed, arched; bill relatively much smaller, the exposed culmen not longer than outer toe, without claw; rump rufous but no rufous on remiges.

Type, Tænioptera erythropygia Sclater = *Cnemarchus erythropygius.*

(Κνημός, slope of a mountain; ἀρχός, ruler, chief.)

Orodynastes gen. nov. (*Tyrannidæ.*)

Agreeing with *Cnemarchus* in all the characters which separate the latter from *Myiotheretes* (except presence of rufous rump and absence of rufous on remiges), but differing as follows: Bill large and strong, the exposed culmen nearly as long as middle toe, with claw; nostril midway between culmen and commissure (instead of nearer to latter), broadly oval or roundish (instead of wedge-shaped); tarsus much less than one and a half times as long as middle toe, without claw; rump not rufous, but remiges extensively of that color.

Type, Tænioptera striaticollis Sclater = *Orodynastes striaticollis.*

(**Ὄρος**, mountain; ***δυναστής***, a sovereign or ruler.)

Tyrannopsis gen. nov. (*Tyrannidæ.*)

Similar to *Tyrannus* Cuvier, but tip of outermost primaries not attenuate tail relatively shorter (shorter than distance from bend of wing to end of secondaries), and nostril much nearer to commissure than to culmen, overhung by a very broad membrane. Differing from *Myiozeta* Bonaparte (to which commonly referred) in relatively much larger and stouter bill, shorter and more rounded wing, shorter tail, and shorter tarsus (the latter shorter than middle toe, with claw).

Type, Muscicapa sulphurea Spix = *Tyrannopsis sulphureus.*

(*Tyrannus* + ὄψις, appearance.)

Tolmarchus gen. nov. (*Tyrannidæ.*)

Similar in general structure to *Pitangus* Swainson, but bill broader and more depressed (its width at posterior end of nostril equal to more than half the distance from nostril to tip of maxilla and one and a half times its depth at same point), longer gonys (very nearly to more than twice as long as mandibular rami), longer tail (much more than four-fifths as long as wing), much longer tenth (outermost) primary (longer than fourth instead of equal to or shorter than first), more exposed nostrils, more scant and conspicuously bristly latero-frontal feathers, longer rictal bristles, and very different style of coloration (under parts grayish white, instead of bright yellow, no white superciliary stripe, etc.).

Type, Pitangus taylori Sclater.

(Τόλμα, bold, daring; ἀρχός, a ruler, a chief, or leader.)

Species: Tolmarchus bahamensis (Bryant), *Tolmarchus caudifasciatus* (D'Orbigny), *Tolmarchus jamaicensis* (Chapman), *Tolmarchus caymanensis* (Nicoll), *Tolmarchus gabbi* (Lawrence), *Tolmarchus taylori* (Sclater).

Phæotriccus gen. nov. (*Tyrannidæ.*)

Apparently nearest to *Knipolegus* Boie, but differing conspicuously (from all other genera of Tyrannidæ also) in the form of the wing, which has the primaries and distal secondaries much abbreviated, the former all very narrow, the five outermost bent or subfalcate; seventh primary longest, the tenth (outermost) shorter than first.

Type, Cnipolegus hudsoni Sclater = *Phæotriccus hudsoni.*

(Φαιός, dusky; τρίκκος, a small bird.)

Allocotopterus gen. nov. (*Pipridæ.*)

Most like *Machæropterus* Bonaparte, but shafts of secondaries excessively thickened, twisted, and expanded terminally into club-shaped or claw-like form; outermost primaries normally broad throughout; tail less than one-third as long as wing, emarginate; nostril small, very broadly operculate, the membrane occupying much the greater part of nasal fossæ; under parts not striped.

Type, Pipra deliciosa Sclater = *Allocotopterus deliciosus.*

(Ἀλλόκοτος, unusual; πτερόν, wing.)

Stictornis gen. nov. (*Cotingidæ.*)

Most like *Euchlornis* DeFilippi (= *Pipreolo* Sclater, nec Swainson?), but bill much larger, stronger, and deeper, with culmen more strongly arched and longer than lateral toes (without claws); tail relatively shorter (decidedly shorter than length of wing from bend to end of secondaries), and outermost (tenth) primary longer than fifth.

Type, Ampelis cinctus Tschudi = *Stictornis cinctus.*

(**Στικτός**, marked, spotted; **ὄρνις**, bird.)

The species designated as the type of this new genus I remove from *Ampelion* Cabanis, which according to my views contains only two of the species there placed in Vol. XIV of the "Catalogue of Birds in the British Museum" (pp. 373–376), the remaining one (*Ampelis arcuata* Lafresnaye) belonging to the genus *Euchlornis* DeFilippi.

Idiotriccus gen. nov. (*Cotingidæ.*)

Superficially resembling the Tyrannine genus *Pogonotriccus* Cabanis and Heine, but tarsal envelope pycnaspidean, with the scutella on lower portion of both acrotarsium and planta tarsi roughened, subtuberculate; bill broader basally and more depressed; nostrils surrounded by membrane; bristles of frontal antiæ, rictus, and chin less developed.

Type, Pogonotriccus zeledoni Lawrence = *Idiotriccus zeledoni.*

(**Ἴδιος**, distinct; **τρίκκος**, a small bird.)

Elainopsis gen. nov. (*Cotingidæ.*)

Superficially resembling the Tyrannine genus *Elainea* Sundevall, but tarsal envelope pycnaspidean and basal phalanx of middle toe wholly united to outer toe.

Type, Elainea elegans Pelzeln (= *Muscicapa gaimardi* D'Orbigny?).

(*Elainea*, a genus of Tyrannidæ; + **ὄψις**, aspect.)

Species: Elainopsis elegans (Pelzeln).

Microtriccus gen. nov. (*Cotingidæ.*)

Similar to *Tyrannulus* Vieillot, but bill relatively stouter, with culmen much more decidedly curved, tarsus relatively shorter, tail relatively much shorter (much less than two-thirds as long as wing), pileum not crested and without yellow, and wings without whitish bands.

Type, Tyrannulus semiflavus Sclater and Salvin.

(**Μικρός**, small; **τρίκκος**, a small bird.)

Species: Microtriccus semiflavus (Sclater and Salvin), *Microtriccus semiflavus brunneicapillus* (Lawrence).

Hylonax gen. nov. (*Cotingidæ.*)

Superficially resembling the more stoutly built species of the Tyrannine genus *Myiarchus* Cabanis, but tarsal envelope non-exaspidean (the planta tarsi consisting of a single continuous row of rather large, quadrate scutella, separated from the inner edge of the acrotarsium by a narrow nonscutellate space), bill longer (as long as head), narrower, with straighter culmen and tip of maxilla more abruptly decurved and more strongly uncinate, and with gonys more convex, more ascending terminally, more prominent basally.

Type, Myiarchus validus Cabanis = *Hylonax validus.*

(**Ὕλη**, forest; **ἄναξ**, king.)

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PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

NEW GENERA OF TYRANNIDÆ AND TURDIDÆ, AND NEW FORMS OF TANAGRIDÆ AND TURDIDÆ.

BY ROBERT RIDGWAY.

By permission of the Secretary of the Smithsonian Institution.

Platytriccus gen. nov. (*Tyrannidæ.*)

Similar to *Platyrinchus* Desmarest * but tail relatively much shorter (but little more than half as long as wing), wing relatively shorter and much more rounded, the longest primaries exceeding distal secondaries by not more (usually much less) than half the length of tarsus, and by less than one-third the length of tail, the tenth (outermost) primary not longer than third (usually shorter than first); tarsus nearly to quite one-third as long as wing, much longer than middle toe with claw, nearly to quite twice as long as exposed culmen; feathers of chin without bristly points.

Type, *Platyrhynchus cancroma* Sclater.

(**πλατύς**, flat, wide, broad, and **τρίκκος**, a small bird.)

Species: Platytriccus cancroma (Sclater); *Platytriccus albogularis* (Sclater); *Platytriccus mystaceus* (Vieillot); *Platytriccus insularis* (Allen); *Platytriccus bifasciatus* (Allen). Probably also the following, which, however, I have not seen: *Platyrhynchus senex* Sclater and Salvin; *Platyrhynchus griseiceps* Salvin; *Platyrhynchus flavigularis* Sclater, and *Platyrhynchus saturatus* Salvin and Godman.

**Platyrinchus* Desmarest, Hist. Nat. Tangaras, Manakins, et Todiers, 1805, livr. 4, text to pl. 72. (Type *Todus platyrhynchos* Gmelin).—*Platyrhynchos* (emendation) Vieillot, Analyse, 1816, 39.—*Platyrhynchus* (emendation) Swainson, Zool. Illustr., ser. 4, i, 1820. pl. 13.—*Platyrhyncus* Descourtilz, Orn. Brés., 1856.

Monotypic, the only known species being *Platyrinchus platyrhynchos* (Gmelin).

Haplocichla[*] gen. nov.

Nearest *Mimocichla* Sclater but tail relatively shorter (not longer than distance from bend of wing to end of secondaries) and less strongly rounded (nearly even), eyelids normally feathered, and with no white on rectrices, but wing with an elongated white patch involving outer web of two innermost greater coverts.

Type.—Turdus aurantius Gmelin = *Haplocichla aurantia.*

Chlorospingus zeledoni sp. nov.

Type from Volcan de Irazú, Costa Rica, 10,500 ft. alt. No. 199,498, U. S. National Museum. ♂ ad. May 20, 1905; R. Ridgway.

Similar in pattern of coloration to *Chlorospingus pileatus* Salvin, but color of chest, sides, and flanks pale yellowish olive, not distinctly contrasted with the pale gray of throat and abdomen (instead of bright olive-yellow, strongly and abruptly contrasted with gray of abdomen, etc.), olive of back, etc., rather duller, and black of head less intense (slightly more slaty). Young very different in color from that of *C. pileatus*, the back, etc., grayish olive (instead of olive-green), the ground color of underparts pale brownish gray instead of olive-yellow.

Higher parts of volcanos of Irazú and Turrialba, Costa Rica, at upper limit of forest and lower portion of ash-cones (altitude about 9,000–10,500 feet.

This species is found in the same localities with *C. pileatus*, both on Irazú and Turrialba; consequently, there being no question as to its being different it must, notwithstanding the character of the differences, be given specific rank. There is a considerable series of this form in the Costa Rican National Museum, that in the collection of the U. S. National Museum consisting of eleven adults and one young bird in first plumage.

I refer to this form with much doubt a single specimen (an adult male) obtained by me on the Volcano of Turrialba May 2, 1905. This differs from all others in greater length of the tail (which measures 67.5 mm., the maximum of four males of true *C. zeledoni* being 65, the minimum 61 mm. and of six females 64 and 55 respectively), and in the almost total absence of any olive tinge on the underparts, which are of a nearly uniform pale gray, only the sides and flanks being distinctly tinged with pale olive-green. The back, etc., are also very much duller and grayer olive-green.

Named for Don José C. Zeledón, of San José, Costa Rica, my companion during many pleasant and successful collecting trips in Costa Rica.

Phœnicothraupis alfaroana sp. nov.

Type from Miravalles, Guanacaste, Costa Rica. No. 199,961, U. S. National Museum. ♂ ad. August 23, 1895; C. F. Underwood.

Most like *Phœnicothraupis rubra* (Vieillot), of Venezuela and Trinidad, but duller in color, the adult male with rump, upper tail-coverts, and wings much less reddish (browner), and red of underparts paler and passing into reddish gray posteriorly, the adult female with upperparts much grayer

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[*] ʽΑπλόυς, simple, plain ; κίχλη, a thrush-like bird.

(light olive), and underparts much less fulvous (pale grayish buff tinged with grayish olive on chest, sides, flanks and under tail-coverts); wing, bill, tarsus, and middle toe longer, tail shorter.

Adult male (two specimens).—Wing, 92–95 (93.5); tail, 71–75.5 (73.2); exposed culmen, 17.5; tarsus, 23–24.5 (23.7); middle toe, 15.5.

Adult female (two specimens).—Wing, 89–91.5 (90.2); tail, 69–72 (70.5); exposed culmen, 17.5–19 (18.2); tarsus, 24–25 (24.5); middle toe, 14–14.5 (14.2).*

This form is very distinct from any other of its Central American congeners, and requires comparison only with *P. rubra* of Venezuela and Trinidad, from which it is easily distinguished by the characters mentioned above. In addition to the specimens in the collection of the U. S. National Museum I have examined ten males and seven females in the collection of the National Museum of Costa Rica.

Named for Don Anastasio Alfaro, Director of the National Museum of Costa Rica, to whom I am indebted for many courtesies during my visit to that country, not the least of which is his genial and helpful companionship on several collecting trips.

Mimocichla rubripes eremita subsp. nov.

Type from Swan Island, Caribbean Sea. No. 111,219, U. S. National Museum. ♂ adult. February 4, 1887; C. H. Townsend.

Similar to *M. rubripes rubripes* but averaging larger, with shorter toes and white of chin and malar region usually more extended.

Catharus frantzii omiltemensis subsp. nov.

Type from Omilteme, Guerrero, southwestern Mexico. No. 185,751, U. S. National Museum, Biological Survey Collection. May 19, 1903; E. W. Nelson and E. A. Goldman.

Similar to *C. frantzii alticola* (Salvin and Godman) but underparts decidedly paler, with whole throat whitish and white of abdomen purer and more extended.

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* Measurements of a series of *Phœnicothraupis rubra* are as follows:—

Adult male (ten specimens).—Wing, 88–94.5 (91.5); tail, 73–79 (76.6); exposed culmen, 15.5–17.5 (16.1); tarsus, 22.5–24 (23.2); middle toe, 13.5–15 (14).

Adult female (two specimens).—Wing, 85–88.5 (86.7); tail, 71.5–72.5 (72); exposed culmen, 16–17 (16.5); tarsus, 21.5–22.5 (22); middle toe, 13–13.5 (13.2).

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PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

A NEW FERN FROM PORTO RICO.

BY WILLIAM R. MAXON.

By permission of the Secretary of the Smithsonian Institution.

The name *Aspidium Krugii* Kuhn is cited by Krug at page 112 of Engler's Botanische Jahrbücher, volume 24, 1897, under *Aspidium rhizophyllum*, as having been given to seven numbers of Porto Rican specimens collected by Sintenis and distributed among various herbaria. Apparently Kuhn had thought his plant distinct; and its reference to the well-known Jamaican *A. rhizophyllum* was probably due to the fact that certain of his unpublished notes and manuscripts, which largely formed the basis of Krug's paper on West Indian ferns, passed through the hands of Dr. Christ, and that the latter's judgment was followed.

In naming a collection of Porto Rican ferns not long ago we perceived the Porto Rican plant to be readily distinguishable from its near ally, and we purpose to so regard it. The name *Aspidium Krugii* having been merely listed can not be regarded as published.

Polystichum Krugii sp. nov.

Differs from *P. rhizophyllum* in its thinner texture, manifest venation, very much shorter stipes, longer and narrower fronds, pinnae narrower and less obtuse (the upper ones greatly reduced but mostly distinct), and especially in having the fructification confined to the greatly elongated (10–12 cm.) linear caudate apex and the first pair or two of minute pinnae.

Type in the U. S. National Herbarium, No. 40,035, being No. 2240 of Sintenis' Porto Rican plants; collected at Cayey, October 5, 1885. The type specimen is the only representative in the National Herbarium of the several numbers cited by Krug. Other Porto Rican specimens are: Goll, No. 342, and Heller, Nos. 536 and 6095. A single Cuban plant in the D. C. Eaton herbarium we also refer here.

Of the true *P. rhizophyllum*[*] we have seen excellent specimens from Jamaica, the type locality; and the illustration of a Jamaican plant by Hooker and Greville[†] is thoroughly characteristic of these. The comparatively short broad tapering apices, as figured, offer a very noticeable difference to the uniformly linear long-attenuate extremities of *P. Krugii.* The Guadeloupe plant cited by Krug (l. c.) under *rhizophyllum* we have not seen.

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[*] **Polystichum rhizophyllum** (Sw.) Presl, Tent. Pterid. 82. 1836.
Polypodium rhizophyllum Sw. Prodr. Veg. Ind. Occ. 132. 1788.
Aspidium rhizophyllum Sw. Schrad. Journ. Bot. **1800**^{2}: 31. 1801.

[†] Hooker and Greville, Icones Filicum **1**: *pl. 59.* 1829.

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PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

A NEW OWL FROM COSTA RICA.

BY ANASTASIO ALFARO,
Director of the Costa Rican National Museum.

Cryptoglaux ridgwayi sp. nov.

Type from La Candelaria Mountains, near Escasú, Costa Rica. No. 149,709, U. S. National Museum. March 29, 1903. Presented by Anastasio Alfaro.

Young male.—Similar to the corresponding stage of *C. acadicus* but latero-frontal region and general color of under wing-coverts wood brown instead of white, and without any white on outer surface of wings or on tail, and toes unfeathered (except basal half of the outer). Above plain warm sepia brown, or between sepia and seal brown, inclining on hindneck to vandyke or mummy brown, the tail darker (between clove brown and seal brown), the remiges grayer brown (between sepia and hair brown), narrowly edged with paler; no trace of white markings on outer surface of wings, except a narrow edging to outermost feather of alula, nor on tail; but inner webs of innermost secondaries with irregular spots of dull whitish near the margins; latero-frontal region wood brown; anterior portion of suborbital region similar but rather paler, deepening on auricular region into dark brown (rather darker than color of pileum): bristly feathers of loral region blackish; throat deep brown, like pileum, with a band of dull buffy whitish immediately below; rest of underparts plain cinnamon-buff or clay color, deeper anteriorly, where passing into russet on sides of breast, decidedly paler on legs and under tail-coverts; under wing-coverts wood brown, tinged with deeper brown, especially on under primary-coverts; under surface of remiges plain deep hair brown, the innermost secondaries with irregular dull whitish spots toward edge of inner web; bill blackish; toes (except basal half of the outer) naked, light colored; claws dark horn color; length (skin), 185; wing, 143; tail, 64; culmen (from anterior edge of cere), 13; tarsus, 25; middle toe, 20.

High mountains of Costa Rica (Cerro de la Candelaria, near Escasú).

I name this small owl in honor of Professor Robert Ridgway, as a "souvenir" of his recent explorations in Costa Rica.

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PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

DESCRIPTIONS OF THREE NEW BIRDS FROM THE MERIDA REGION OF VENEZUELA.

BY J. H. RILEY.

By permission of the Secretary of the Smithsonian Institution.

The U. S. National Museum recently purchased a small collection of bird skins from the well-known zoological collectors Salomon Briceño Gabaldón e hijos from the Merida region of Venezuela. Coming from a locality from which most of the European museums and collectors have received so much material, principally from the above source and the exertions of A. Goering, it was not to be expected that the collection would contain many novelties. The three following birds appear to be new, however, and are herewith described.

Leptasthenura montivagans sp. nov.

Type from San Antonio, Venezuela, 3000 meters. No. 190,383, U. S. National Museum. ♂ adult. July 20, 1903.

Specific characters.—Similar to *Leptasthenura andicola* Sclater, but grayer, the back more prominently streaked with white, the shaft streaks on the top of the head lighter, the wings shorter and the tail feathers more pointed.

Description.—Top of head black with cinnamon shaft streaks; cervix and interscapular region clove brown with rather broad white shaft streaks; lower back, rump, and upper tail-coverts broccoli brown with obsolete dusky streaks, these streaks more pronounced and lighter on the rump; chin and narrow superciliary streak white; below hair brown with white shaft streaks, these streaks more pronounced on the jugulum and chest, fading and becoming obsolete on the belly; flanks washed with isabella color; under tail-coverts dusky with whitish edgings; wings blackish, the coverts prominently edged with bistre, the inner primaries and secondaries light rufous near the base, the rufous divided by a black line along the shaft in the primaries; the under wing blackish, the inner primaries and secondaries edged with vinaceous-cinnamon; under wing-coverts vinaceous-cinnamon, whitish along the bend of the wing; tail blackish, the three outer feathers margined on the outer web with white and rather broadly-tipped diagonally with hair brown with some obscure black mottlings, the two central feathers narrowly margined with hair brown. Bill and feet (in skin) black.

Wing, 65.5; tail, 95; culmen, 10.5; tarsus, 20; middle toe, 12.5 mm. A female collected at the same locality is similar to the male and measures: Wing, 64; tail, 89; culmen, 10; tarsus, 19; middle toe, 12.5 mm. Three unsexed specimens of *Leptasthenura andicola* from Ecuador average: Wing, 68.8; tail, 81.3; culmen, 10; tarsus, 20.3; middle toe, 13.2 mm.

Haplospiza montosa sp. nov.

Type from San Antonio, Venezuela, 3,000 meters. No. 190,413, U. S. National Museum. ♂ ad. August 15, 1903.

Specific characters.—Similar to *Haplospiza nivaria* Bangs, but with a longer bill, darker both above and below, and with the feet and tarsi horn color not black.

Description.—Above blackish slate, darker on the interscapular region and lighter on the rump; pileum showing indistinct striations; the forehead and lores washed with pale gray; below slate color, whitish on the anal region; under tail-coverts whitish with dark centers; tail blackish; wings blackish, all the feathers edged with the color of the back. Bill (in skin) blackish, lighter along the center of lower mandible; tarsi and feet horn color. Wing, 80.5; tail, 61; culmen, 12; tarsus, 23; middle toe, 15.5 mm.

Female similar above to that of *Haplospiza nivaria* but much more heavily streaked below with black, the streaks heavier on the chest. Wing, 73.5; tail, 55.5; culmen, 11; tarsus, 21; middle toe, 14 mm.

Remarks.—While the male does not differ greatly from *H. nivaria*, the female is quite another bird. It is heavily streaked below with broad black streaks and though these are heavier on the chest it is not as lightly streaked on the lower breast and belly as *H. nivaria*. Besides the type there are two immature males in the plumage of the female, and one adult female, all collected at the same locality and on the same day.

Pheucticus uropygialis meridensis subsp. nov.

Type from Pedregora, Venezuela, 2,500 meters. No. 190,410, U. S. National Museum. ♂ ad. April 29, 1903.

Subspecific characters.—Similar to *Pheucticus uropygialis* Sclater and Salvin, but rump more extensively yellow, the interscapular region mottled with yellow, the breast deeper yellow, and the flanks without black spotting.

Description.—Head, chin, throat, and jugulum black; feathers of the interscapular region gray at the base, then a small white spot followed by a small lemon yellow spot on one or both webs and tipped with black;

feathers of rump gray at the base, followed by a small white spot, then broadly by lemon yellow, and narrowly tipped with black; upper tail-coverts black with a lemon yellow or white spot near the tip and gray at the base; breast, abdomen, and under tail-coverts deep lemon yellow, the feathers gray at the base with a white spot next to the yellow; tail black, the three outer feathers rather broadly tipped with white, succeeded by a tiny black dot at the tip, the white much reduced on the third feather and not reaching the outer web, the fourth feather with three tiny white dots at the tip; wings black, the lesser coverts deep lemon yellow, the greater coverts with large white spots at the tip forming a conspicuous wing patch, the eight outer primaries white at the base, the white not reaching the outer web on the outermost, forming a wing speculum; tertials and secondaries with a white spot on the outer web near the tip; under wing-coverts deep lemon yellow; thighs black, tipped with lemon yellow; upper mandible (in skin) black, lower bluish slate color; tarsi black. Wing, 104.5; tail, 86; culmen, 22; tarsus, 23.5; middle toe, 18 mm.

Remarks.—Though this form is described from a single specimen the differences, taken in connection with the fact that the Merida region seems to be faunally distinct from the country to the east and west of it, are great enough to warrant its separation as a geographical race at least.

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PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

GENERAL NOTES.

NOTE ON THE GENERIC NAMES *PTERONOTUS* AND *DERMONOTUS*.

In these proceedings* Dr. Theo. Gill has recently asserted that the use of the generic name *Pteronotus* as applied by Gray in 1838 to a genus of Phyllostomid bats is invalidated by the previous existence of a *Pteronotus* Rafinesque, proposed in 1815 as a substitute for *Pteropus.*† He therefore replaces the *Pteronotus* of Gray by the new name *Dermonotus*. After examining Rafinesque's work, I find myself forced to a different conclusion. Rafinesque enumerated fourteen genera of bats: 1, *Rhinolophus* Cuv.; 2, *Phyllostoma* Geof.; 3, *Vampyrum* R. do. Geof. sans queue; 4, *Megaderma* Geof.; 5, *Pteropus* Bris. Erxl.; 6, *Eidolon* R. do. à queue; 7, *Pteronotus*, R. do. sp.; 8, *Cephalotes* Geof.; 9, *Tadaris* R.; 10, *Vespertilio* L. Geof.; 11, *Nycterus* Geof.; 12, *Noctilio* Geof.; 13, *Molossus* Geof.; 14, *Atalapha* R. It is evident that he intended *Pteronotus* not as a substitute for *Pteropus*, but as the name of a new genus based on certain species of "*Eidolon*" or *Pteropus*, the list of abbreviations at the end of the volume (page 216) explaining that "sp. do." means "species of the preceding genus." As no characters are suggested for this genus, the name *Pteronotus* of Rafinesque is a nomen nudum without status in nomenclature. Gray was therefore free to apply the term to the Phyllostomid genus; and the new name *Dermonotus* is not required. —*Gerrit S. Miller, Jr.*

SYMBOS, A SUBSTITUTE FOR *SCAPHOCEROS*.

Prof. T. D. A. Cockerell, of the University of Colorado, has kindly called my attention to the fact that the generic name, *Scaphoceros*, which I proposed recently (Smiths. Misc. Coll., Quart. Issue, XLVIII, pp. 173–158,

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* Vol. XIV, p. 177, September 25, 1901.

† Analyse de la Nature, p. 54.

July 1, 1905) for an extinct relative of the musk ox is preoccupied by *Scaphocera* 1884, used by Saalmüller for a genus of Lepidoptera (Lepid. v. Madagascar, I, p. 181, May, 1884). I therefore propose in its stead **Symbos**, a name suggested to me by Dr. Theo. Gill. The two species of this genus will therefore stand as *Symbos tyrelli* and *Symbos cavifrons.*—*Wilfred H. Osgood.*

A NEW NAME FOR A MIDDLE AMERICAN FERN.*

In the first fascicle of Christensen's Index Filicum (1905), *Acrostichum lomarioides* Jenman, a middle American species, is reduced to *A. aureum* L., supposed to be dispersed generally throughout the tropics. In first proposing *lomarioides*, Jenman suggested that *A. aureum* might prove an aggregate of several more or less closely related species; and arguing from analogous cases we judge this to be likely. But at present we are concerned only with *lomarioides*, described at length by Jenman; this and *aureum* he held to be as distinct as "any two closely allied species in any genus." Several recent writers have not held to this opinion; but from field observation and the collection of adequate material we are quite convinced that the two are, as Jenman has said, absolutely distinct, and we shall try to prove this conclusively in a later paper.

Jenman's use of *lomarioides* for an American plant is, however, invalidated by the earlier application of the same name to an East Indian species, by Bory. In its stead we propose, with the same type:

Acrostichum excelsum nom. nov.

Chrysodium lomarioides Jenman, Timehri **4**: 314. 1885.
Acrostichum lomarioides Jenman, Bull. Bot. Dept. Jamaica. II. **5**: 154. 1898.
Not Bory, Belang. Voy. Bot. **2**: 21. *pl. 2.* 1833.

The type of Jenman's species is from British Guiana, but the plant occurs also in Jamaica, Porto Rico, Florida, Mexico, and Guatemala.—*William R. Maxon.*

A NEW NAME FOR LEWIS' WOODPECKER.

Picus torquatus Wilson, Am. Orn. III, 1811, 31, pl. xx, fig. 3, is preoccupied by *Picus torquatus* Boddært, Table Pl. Enl. 1783, 52, No. 863, for a South American woodpecker, *Cerchneipicus torquatus.* Coues, Birds, N. W. 1874, 291, quotes in the synonomy of *Asyndesmus torquatus*, *Picus lewisii* Drapiez from Gray. Gray, Genera Birds, III, 1849, appendix, p. 22, writes it *Picus Lewis* Drap. With the assistance of Messrs. J. A. G. Rehn and Glover M. Allen, I have been unable to find that Drapiez ever proposed the above name, but in the Dict. Class. d'Hist. Nat. XIII, 1828, 501, he gave as a vernacular heading "Pic Lewis," that probably gave rise to Gray's combination. *Picus montanus* Ord, Guthrie's Geography, 2nd Am. Ed., 1815, 316, which has been quoted as a synonym of Lewis' Woodpecker, belongs to *Nucifraga*

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columbiana, according to Rhoads, Reprint of Guthrie's Geography, 1894, Appendix, p. 36. As this leaves the *Picus torquatus* of Wilson without a name, it may be called **Asyndesmus lewisi**.—*J. H. Riley.*

DESCRIPTION OF AN ADULT FEMALE *EUPHONIA* SUPPOSED TO BE *EUPHONIA GNATHO* (CABANIS).*

The status of *Euphonia gnatho* (Cabanis) † has never been satisfactorily determined. It is admitted into the *Biologia Centrali-Americana* (Aves, i, 1883, 262) as possibly a distinct species but the doubt is expressed whether it is really distinct from *E. hirundinacea* Bonaparte, on the strength of an adult male from Tempate, on the Gulf of Nicoya, western Costa Rica. It is likewise admitted into the Catalogue of Birds in the British Museum (xi, 1886, 76), but with reservations as to its validity.

The bird described by Cabanis was an adult male, the exact locality whence it came being unknown or at least not stated. It was compared with *E. chalybea* (Mikan) of southeastern Brazil, from which it was said to differ in having the yellow color of the underparts, etc., more saturated. The male from Tempate, western Costa Rica, described by Salvin and Godman, is said to agree "in every respect except in the greater development of the bill" with the adult male of *E. hirundinacea.*

On March 8, 1905, while awaiting the arrival of our boatman to take us back to camp, Mr. José C. Zeledón and I put in a short time shooting birds from a wild fig tree on the bank of the Rio Grande de Tárcoles, a short distance above the mouth of that stream. Among the birds secured on that occasion is an adult female *Euphonia* which is apparently referable to *E. gnatho;* at least it can not be referred to any other known species. The only one which it at all closely resembles is *E. hirundinacea*, but that it is perfectly distinct there can not be the slightest doubt, the bill being very much deeper, less compressed terminally, and with the culmen and gonys much more strongly convex, and the coloration distinctly different. It may be described as follows:

Euphonia gnatho (Cabanis) (?)

Adult female.—Above dark olive-green (becoming brighter on rump and upper tail-coverts) distinctly glossed with metallic bluish green; beneath bright yellow shaded laterally with pale olive-green, the median portion of the throat pale gray, tinged with olive-yellow, the lower abdomen white, in abrupt contrast with the bright olive-yellow of flanks and pure yellow of upper abdomen and median portion of breast, and under tail-coverts;

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† *Phonasca gnatho* Cabanis, Journ. für Orn., viii, Sept., 1860 (published Jan., 1861), 335 (Costa Rica; coll. Berlin Mus.).—*Euphonia gnatho* Lawrence, Ann. Lyc. N. H. New York, ix, 1868, 98; Frantzius, Journ. für Orn., 1869, 297; (?) Salvin and Godman, Biol. Centr. Am., Aves, i, 1883, 262 (Tempate, Gulf of Nicoya, Costa Rica); (?) Sclater Cat. Birds Brit. Mus., xi., 1886, 76 (Tempate and Turrialba, Costa Rica); Zeledon, Anal. Mus. Nac. Costa Rica, i, 1887, 109.—*Euphonia hirundinacea* (not of Bonaparte) Ridgway, Bull. U. S. Nat. Mus., No. 50, pt. ii, 1902, 25, part (in synonomy).

axillars pale olive-yellow; under wing-coverts white, tinged with pale olive-yellow; under primary-coverts deep mouse gray; inner webs of remiges rather broadly edged with pale brownish gray; maxilla brownish black; mandible bluish gray (in life) becoming dusky at tip; iris dark brown; legs and feet dark bluish gray (in life); length (skin), 95 mm.; wing, 67; tail, 33.5; exposed culmen, 9; depth of bill at frontal antiæ, 6, its width at same point, 7; tarsus, 14; middle toe, 10. (No. 198,537, coll. U. S. National Museum; near Pigres, Costa Rica, March 8, 1905; José C. Zeledón.)—*Robert Ridgway.*

VOL. XVIII, PP. 227-228 DECEMBER 9, 1905

PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

A NEW BAT FROM GERMAN EAST AFRICA.

BY GERRIT S. MILLER, JR.

By permission of the Secretary of the Smithsonian Institution.

Two bats of the genus *Lavia* collected by Dr. W. L. Abbott at Taveta, German East Africa, in 1889, prove to differ too considerably from the West African *Lavia frons* to be regarded as the same species. They may be known as:

Lavia rex sp. nov.

1892. *Megaderma frons* True, Proc. U. S. Nat. Mus., XV, p. 469, October 26, 1892 (part). Briti

Type from Taveta, ~~German~~ East Africa. No. $\frac{18993}{38197}$, United States National Museum. ♂ adult (in alcohol). 1889. Dr. W. L. Abbott.

Characters.—Like the West African *Lavia frons* (Geoffroy) but considerably larger (forearm 60 instead of 56, mandible 17.8 instead of 15.2), and with disproportionately heavier teeth.

Color.—(Skin of topotype, No. 18,992, not sexed): Fur everywhere drab-gray (that of belly a little darker than that of back) tipped with ochraceous-buff. On middle of back and neck and on posterior half of belly the ochraceous-buff is so inconspicuous that it scarcely modifies the ground color, but on face, sides of neck, entire chest and throat, and along border of interfemoral membrane it strongly predominates. At shoulder the wood-brown fades to buffy white, forming an inconspicuous light shoulder spot. The type does not appear to differ appreciably in color from the dry specimen, though it has been subject to the action of alcohol for more than fifteen years.

Ears, membranes, etc.—Probably not different from those of *Lavia frons*. Dr. F. W. True has already noted the peculiar broadened, serrated form of the secondary lobe of the tragus in the type specimen as compared with that figured by Dobson and represented by a Sierra Leone specimen in the United States National Museum. In the skin from Taveta this lobe has a form intermediate between the others and closely resembling that of *Lavia frons* as figured by Geoffroy. The variation is probably individual.

Skull and Teeth.—As compared with those of an adult male *Lavia frons* from Sierra Leone (No. 38,196, United States National Museum) the skull and teeth of *Lavia rex* are readily distinguishable by their uniformly greater size and massiveness. In actual form of either skull or teeth there are no striking differences between the two species; but the larger animal has the audital bullæ relatively larger and the interpterygoid space narrower, while the teeth, particularly the upper canines and upper molars, are very considerably increased in size.

Measurements.—Type: Head and body, 70 (60);* tibia, 34 (29); foot, 16 (15); forearm 60 (56); thumb 14 (11); second finger, 62 (55); third finger, 110 (105); fourth finger, 78 (72); fifth finger, 83 (75); ear from meatus, 43.6 (40); ear from crown, 39 (33); width of ear, 28 (26); tragus, 29 (25); noseleaf, 22 (22); greatest width of noseleaf (flattened), 16 (16). Skull: Greatest length, — (23); basal length, — (18); basilar length, — (16); median palatal length, 6.6 (4.8); greatest palatal width including molars, 9.2 (8.2); distance between tips of upper canines, 5.4 (4); mandible, 17.8 (15.2); maxillary toothrow, 9.2 (8.2); mandibular toothrow, 11 (9).

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*Measurements in parentheses are those of an adult male *Lavia frons* from Sierra Leone (No. $\frac{14529}{38196}$ United States National Museum).

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PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

A NEW GENUS OF BATS FROM SUMATRA.

BY GERRIT S. MILLER, JR.

By permission of the Secretary of the Smithsonian Institution.

On September 9, 1903, Dr. W. L. Abbott found two small bats roosting in the abandoned nest of a broad bill in heavy forest on the banks of the Kateman River, eastern Sumatra. These specimens represent a new species belonging to a hitherto unknown genus allied to *Kerivoula* but strikingly distinct.

Phoniscus gen. nov. (*Vespertilionidæ*).

Type.—Phoniscus atrox sp. nov.

Characters.—Like *Kerivoula* but with upper canine strongly compressed, the shaft with deep longitudinal groove on outer side and with conspicuous posterior cutting edge, the length of the tooth so increased that the point extends noticeably beyond exposed portion of lower canine when jaws are closed, and in life enters a distinct pocket in the lower lip; lower incisors with crowns relatively longer than in *Kerivoula*, that of the inner tooth with four well developed cusps; skull with braincase so elevated anteriorly that the highest portion is at middle instead of in occipital region.

Remarks.—The peculiar shape and greatly increased size of the upper canine, together with the very unusual four-cusped structure of the inner mandibular incisor, sufficiently distinguish this genus from *Kerivoula*. But the modifications are not confined to these teeth, as the premolars, both above and below, have become more pointed and trenchant, while the whole anterior portion of the rostrum is strengthened. Contrary to what might be expected, the mandible and lower canines remain unchanged.

Phoniscus atrox sp. nov.

Type from the vicinity of Kateman River, eastern Sumatra. No. 123,141, United States National Museum. ♀ adult (in alcohol). September 9, 1903. Dr. W. L. Abbott. Original number, 2781.

Characters.—In size and general appearance not unlike *Kerivoula hardwickii*, but form less slender, and tail distinctly shorter than head and body; metacarpal of fifth finger slightly but distinctly shorter than that of fourth; dorsal surface of leg, foot, forearm, thumb, second finger, and last joint of third finger closely sprinkled with fine hairs; fur of neck noticeably longer than that of back, each hair with four sharply defined rings of color; skull more robust than that of *Kerivoula hardwickii*, the braincase much deeper relatively to its width.

Color.—Fur of upperparts with four color rings. Beginning at base these are (1) prouts-brown, (2) light, yellowish broccoli-brown, (3) prouts-brown darker than the first, and (4) a metallic golden orange. The general effect is a conspicuous, changing mixture of the orange and the dark brown, the former in excess except when the hairs are disarranged. Underparts between broccoli-brown and hair-brown, the hairs becoming much darker on proximal half, and in certain lights showing faintly golden tips, especially across chin and throat. Membranes and ears blackish, the tragus whitish in strong contrast.

Measurements.—External measurements, those of the second specimen (adult female, No. 123,142) in parenthesis: Head and body, 43 (46); tail, 38 (37); tibia, 14 (15); foot, 7.4 (7.6); forearm, 34 (35); thumb, 7 (6.4); second finger, 33 (31); third finger, 73 (71); fourth finger, 53 (52); fifth finger, 49 (49); ear from meatus, 13 (13.6); ear from crown, 10 (9.6); width of ear, 11 (11.6).

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PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

A NEW LYCOPODIUM FROM GUATEMALA.

BY WILLIAM R. MAXON.

By permission of the Secretary of the Smithsonian Institution.

Among a collection of Guatemalan plants received at the U. S. National Museum in 1902 there was a single specimen of Lycopodium which at that time we were unable to refer satisfactorily to any species known from middle America. While manifestly of close alliance to *L. aqualupianum* of the West Indies it seemed to offer notable differences, but in the absence of additional material we hesitated to describe it as new. During January of 1905 we were fortunate in visiting the precise locality, in Alta Verapaz, whence this specimen had been received; and although we were able to collect but a single additional plant this accords so perfectly with the former in the characters distinguishing it from *L. aqualupianum*, its nearest ally, that we have no doubt that they represent a distinct species:

Lycopodium dichaeoides sp. nov.

Plant pendent, 25 cm. long, the type specimen four times dichotomously branched in the apical half at regular intervals: leaves bright green, sessile, divergent, in four ranks, those of the lower main stem 9 to 10 mm. long by 4 to 5 mm. wide, broadly subspatulate, the upper ones gradually smaller (6 to 7 mm. by 3 to 3.5 mm.), exactly oblong-oval, imbricate in drying; all obtuse or with a very slight apiculation, the midvein concealed throughout: strobiles very short (8 to 18 mm.), stout, simple or mostly once forked, conspicuously quadrangular; sporophylls 1.5 mm. long, rigid, achene-like, broadly triangular-ovate, acuminate, deeply cucullate, carinate, the stout beak exceeding the sporangium about 0.5 mm.; sporangium orbicular-reniform, with a deep narrow sinus.

Type in the U. S. National Herbarium, No. 408,034, collected near the Finca Sepacuité, Alta Verapaz, Guatemala, March 28, 1902, by O. F. Cook and R. F. Griggs; collectors' number 251.

The second specimen referred to was collected by Robert Hay and the writer, on the trail between Sepacuité and Secanquim, at an altitude of about 1,000 meters, in Alta Verapaz, January 12, 1905, No. 3268 (U. S. National Herbarium, No. 473,235), from a tree trunk in the humid forest region.

Lycopodium dichaeoides may be distinguished from *L. aqualupianum* by its broader and more obtuse leaves, its concealed venation, and especially by its short stout strobiles which are closely aggregated in dense clusters and are from one-fifth to one-twentieth as long as those of *L. aqualupianum.* The sporophylls too are shorter, stouter and relatively much broader.

VOL. XVIII, PP. 233-236 DECEMBER 9, 1905

PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

DESCRIPTIONS OF APPARENTLY NEW SPECIES AND SUBSPECIES OF MAMMALS FROM MEXICO AND SAN DOMINGO.

BY D. G. ELLIOT, F. R. S. E. ETC.

With one exception all the species described in this paper were obtained in Mexico by the collectors for the Field Columbian Museum, Messrs. Heller and Barber. The *Phyllonycteris* has been in the museum collection for several years, but failing to obtain more examples it is now described in hopes that attention may be drawn to it and more specimens thereby procured.

Tamias nexus sp. nov.

Type from Coyotes, Durango, Mexico. Field Columbian Museum. Collector's No. 4293.

General characters.—Darker generally than either *T. bulleri* or *T. durangæ.* Light dorsal stripes reddish not gray; rump and thighs much darker; light face stripes not so pure white; underparts mostly plumbeous on sides and belly, not white, and middle of tail beneath chestnut, not buff nor ochraceous-buff as in the two forms named above.

Color.—Top of head iron gray, black stripe from nose above eye nearly to ear, and one from nose to eye, becoming dark chestnut behind eye to ear; yellowish white stripe from nose between the black ones becoming a narrow line above eye and a broader one beneath eye; broad chestnut stripe from nose across cheeks to beneath ear. Grayish white patches behind ears; back of neck, shoulders, flanks, upper side of arms from wrists and thighs to ankles dark gray tinged on shoulders and flanks with yellowish; median black dorsal stripe from head to root of tail bordered on either side with a rufous and gray stripe, followed by a blackish chestnut stripe, succeeded by an outermost stripe of ochraceous, the outermost of all being dark chestnut. There are thus five dark stripes and four lighter ones, the middle pale ones being so tinged with red as to give the dorsal region a chestnut hue. Rump rufous; underparts from chin to and including breast white, remainder plumbeous with a whitish line through center of abdomen. Tail above black edged with white, beneath chestnut bordered with black and edged with white, tip black also edged with white. Hands and feet whitish-gray; ears externally black on anterior half, gray on posterior.

Measurements.—Total length, 235; tail vertebræ, 91; hind foot, 27; ear, 21. Skull: Occipito-nasal length, 38; Hensel, 30; interorbital width, 9; zygomatic width, 21; mastoid breadth; 17; palatal length, 16; length of nasals, 12; width of rostrum posteriorly, 7; length of upper toothrow, 6; length of mandible to tip of incisors, 23; length of lower toothrow, 6.

Remarks.—Five specimens of this chipmunk were obtained by Messrs. Heller and Barber at Coyotes, about 20 miles to the west of Durango City. While resembling somewhat the two forms to the westward of the Sierra Madre, as might be expected, the present form attracts attention by its darker and more reddish coloration, especially on the back and rump, by the rufous hue of the pale dorsal stripes; by the plumbeous underparts and by the chestnut color of the tail beneath. It appears to be entitled to specific recognition, and may not be placed with either of its near relations. For comparison, I have had Dr. Allen's types and series of *T. bulleri* and *T. durangæ.*

Rhithrodontomys amœnus sp. nov.

Type from Reforma, Oaxaca, Mexico. Field Columbian Museum. Collector's No. 3823.

General characters.—Somewhat similar to *R. helvolus* but smaller and diferently colored

Color.—Fore part of back, cheeks and shoulders pale ochraceous buff; top of head, lower part of back, rump and flanks dull ochraceous rufous, tinged with hazel; underparts, hands and feet white; tail brownish above, white beneath.

Measurements.—Total length, 148; tail vertebræ, 81; hind foot, 8.5. Skull: Total length, 20; Hensel, 14; zygomatic width, 10; interorbital width, 3; palatal length, 8; length of nasals, 6; of upper toothrow, 4; of mandible, 12; of lower toothrow, 4.

Remarks.—In color, this species does not closely resemble any described, although it belongs to the group represented by *R. helvolus* and is perhaps nearest to that form, but it is considerably smaller, as the measurements show, with quite a different style of coloration. A single specimen was procured by Messrs. Heller and Barber. Another example is in the collection of the Biological Survey.

Orthogeomys cuniculus sp. nov.

Type from Yautepec, Oaxaca, Mexico. Field Columbian Museum. Collector's No. 3878.

General characters.—Size medium; no nasal pad; hair scanty; pelage rather harsh, neither bristly nor soft; tail long, naked; skull heavy; zygomata slender and narrowest posteriorly; nasals long.

Color.—General color over all the body vandyke brown; hairs on underparts and limbs very scanty, the flesh color of the skin being chiefly noticeable; hands, feet and tail flesh color. An immature specimen is Prout's brown, somewhat darker than the adult, the fur being more woolly.

Measurements.—Total length, 330; tail vertebræ, 95; hind foot, 44; ear, 7.

Skull: Total length, 59; Hensel, 50; zygomatic width, 26; interorbital width, 12; palatal length, 26; median length of nasals 23; width posteriorly, 4; width anteriorly, 7; length of upper toothrow, 8; length of mandible, 47; of lower toothrow, 8.

Remarks.—This species does not seem to require comparison with any other known. It belongs to that section of the genus without nasal pads and is about the size of *O. latifrons* but with somewhat differently proportioned tail and feet. The specimens were procured by Messrs. Heller and Barber.

Heterogeomys lanius sp. nov.

Type from Xuchil, Vera Cruz, Mexico. Field Columbian Museum. Collector's No. 4092.

General characters.—Size large; fur soft, woolly; color very dark. Skull heavy; nasals long, widening greatly anteriorly; zygomata broad anteriorly; palatal arch pointed but not acute; pterygoids graduated to acute point; incisors large, heavy, curved; mandible heavy, compact.

Color.—Entire upperparts and sides blackish seal brown, more black than brown; underparts dark hair brown; numerous white hairs on rump at base of tail and all over the underparts, so thickly gathered toward base of tail beneath as to cause that part to appear white. Hands and feet very dark seal brown; tail blackish, naked; claws very long, curved, horn color.

Measurements.—Total length, 361; tail vertebræ, 90; hind foot, 54; ear, 10. Skull: Total length, 64; Hensel, 51; zygomatic width, 41.5; interorbital width, 14; palatal length, 39; length of nasals, 26; width posteriorly, 6; width anteriorly, 10; length of upper toothrow, 14; length of mandible to tip of incisors, 53; of lower toothrow, 13.

Remarks.—This species by its peculiar soft woolly coat differs from the other described forms and would seem to be easily recognizable. It is somewhat larger than *H. hispidus*, but the hair of that species is harsh as its name indicates. The specimens were obtained by Messrs. Heller and Barber.

Putorius macrophonius sp. nov.

Type from Achotal, Vera Cruz, Mexico. Field Columbian Museum. Collector's No. 3474.

General characters.—Size very large; tail exceedingly long; skull large and heavy; teeth large; canines long, narrow.

Color.—Top and sides of head black graduating into chestnut brown of upperparts and sides of body; this hue extending well on to the underparts between the limbs; limbs, hands, feet and tail chestnut brown, the last tipped with black; white spot above eye and white stripe from above eye to ear; chin and throat white reaching into the dark ochraceous buff of the underparts.

Measurements.—Total length, 598; tail vertebræ, 246; hind foot, 59; ear, 23. Skull: Total length, 60; Hensel, 54; zygomatic width, 34; interorbital width, 8; palatal length, 24; length of upper toothrow including canine, 16; length of canine, 9; length of mandible, 35; of lower toothrow including canine, 20.

Remarks.—This is the largest member of the bridled weasel group yet discovered. The nearest ally appears to be *P. f. goldmani*, but the difference in the dimensions are so great that any comparison is useless. The skulls of the two forms contrasted together exhibit in that of the present species the following differences: Interorbital space narrower; braincase longer; bullæ much wider, longer and flatter; pterygoid fossa longer, the arch pointed; teeth much larger and palate longer and wider. Specimens were obtained by Messrs. Heller and Barber.

Phyllostoma verrucossum sp. nov.

Type from Niltepec, Oaxaca, Mexico. Field Columbian Museum. Collector's No. 3886.

General characters.—Size small; V-shaped groove on lower lip margined with eleven to thirteen warts; ears as in the genus; calcar shorter than foot. Skull compared with that of *P. hastatum* is relatively broader interorbitally and the rostrum narrower anteriorly, while the upper occipital outline is continuous.

Color.—Fore part of head above and face from ears to end of nose dark fawn becoming brownish around eyes; band from behind ears and over the center of the back dark russet; back of head and nape very dark mummy brown; chin, throat and breast whitish buff; rest of underparts olive gray with a pinkish tinge on the sides; ears, membranes, feet and tail, blackish brown. In some specimens the throat is ochraceous buff.

Measurements.—Total length, 105; tail vertebræ, 15; foot, 17.5; ear, 20; forearm, 62.25. Skull: Total length, 32; Hensel, 22; zygomatic width, 17; palatal length, 13; length of nasals, 4; length of upper molar series, 7; length of mandible, 20; of lower molar series, 9.

Remarks.—This new form of *Phyllostoma* can not be confounded with any other of this genus heretofore described. It is much smaller than *P. hastatum* but larger than Mr. Thomas' species from British Guiana. A number of examples were obtained by Messrs. Heller and Barber.

Phyllonycteris santa-cristobalensis sp. nov.

Type from San Cristobal, San Domingo, W. I. Field Columbian Museum. Collected by G. K. Cherrie.

General characters.—Ear long, rather narrow, tip rounded; tragus broad, with elongated acute tip; nose leaf small, separated from ridge behind by a deep groove; wings from above ankle; toes very long. Skull with elevated arched braincase, high above rostrum; the latter broad, swollen; zygomatic arch complete; canines rather large, molars small; palate broad.

Color.—Above vandyke brown at tips, rest of hairs white; beneath pinkish buff; ears brown; wings black.

Measurements.—Skin: Total length, nose to end of foot, 89; forearm, 45; thumb, 13; fifth finger, 57; tibia 20; foot, 14.5. Skull: Occipito-nasal length, 21; total length, 23; zygomatic width, 11; height of braincase, 10; length of nasals, 7; width of rostrum, 5; palatal length, 10; width of palate, 4; length of upper molar series, 7; length of mandible, 15.

Remarks.—In color this species differs from all others of the genus and from *P. poeyi* in addition in having a complete zygomatic arch.

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PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

DESCRIPTION OF AN APPARENTLY NEW SUBSPECIES OF *MICROGALE* FROM MADAGASCAR.

BY D. G. ELLIOT, F. R. S. E. ETC.

The race here described is in a small collection of mammals in the Field Museum from Madagascar, obtained by Mr. Forsyth Major, and seems sufficiently different from *M. cowani*, also in the collection, to be worthy of a name.

Microgale cowani nigrescens subsp. nov.

Type from Madagascar. Field Columbian Museum.

General characters.—About the size of *M. cowani*, color nearly black.

Color.—Upperparts black with rufous tips to hairs on head and flanks; underparts lead color, with brownish tinge on middle of breast and abdomen; legs and ears black; tail black.

Measurements.—Total length, 129 mm.; tail, 48; hind foot, 10. Skull: Occipito-nasal length, 20.5; interorbital width, 5; length of nasals, 8; palatal length, 9; length of upper toothrow, 8; mastoid width, 9; length of half mandible, 15; lower toothrow, 9.

Vol. XVIII, pp. 239-240 December 9, 1905

PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

A NEW NAME FOR *KAULFUSSIA* BLUME, A GENUS OF MARATTIACEOUS FERNS.

BY WILLIAM R. MAXON.

By permission of the Secretary of the Smithsonian Institution.

The generic name *Kaulfussia* given by Blume in 1828 to a Javan fern described earlier in the same volume as *Aspidium aesculifolium* is invalidated by *Kaulfussia* Dennstedt (1818) applied to a genus of Polygalaceae and by *Kaulfussia* Nees (1820) for a genus of Compositae. Subsequently the name *Macrostoma* was associated in manuscript, by Griffith, with a supposed second species (*assamica*) of the same genus; but *Macrostoma* appears never to have been formally published and is in any event untenable. So far as we know no other name has ever been proposed for this peculiar genus of marattiaceous ferns, and we have accordingly renamed it as below, in honor of Herr Carl Christensen, of Copenhagen, the first part of whose valuable *Index Filicum* now issuing we have already had occasion to notice.*

Christensenia nom. nov.

Kaulfussia Blume, Enum. Pl. Jav. **2**: 260. 1828. Not Kaulfussia Dennstedt, Schlüss. Hort. Ind. Malabar. 30. 1818. Not Kaulfussia Nees, Hor. Phys. Berol. 53. *pl. 11.* 1820.

Macrostoma Griffith, Asiat. Researches **19**^{1}: 108. 1836. Not Macrostoma Hedwig, Gen. Pl. 102. 1806, which is Macrostema Persoon, Synop. Pl. **1**: 185. 1805. Not Macrostomium Blume, Bijdr. Fl. Nederl. Ind. 335. *f. 37.* 1825.

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* Science, II. **22**: 267-269. Sept. 1, 1905.

The type of *Kaulfussia* Blume and therefore of *Christensenia* is *Aspidium aesculifolium* with the following synonymy:

Christensenia aesculifolia (Blume).

Aspidium aesculifolium Blume, Enum. Pl. Jav. **2**: 143. 1828.
Kaulfussia aesculifolia Blume, Enum. Pl. Jav. **2** : 260. 1828.

The distribution of true *C. aesculifolia* outside of Java, the type region, is more or less uncertain. De Vriese and Harting, in their Monographie des Marattiacées (1853), recognize four species of Kaulfussia, viz. *K. aesculifolia* Blume, l. c., from Java and Leyte; *K. assamica* Griffith, Asiat. Researches **19**^{1} : 108. *pl. 19.* 1836, from Assam; *K. Korthalsii* de Vriese, Epim. Ind. Sem. Hort. Lugd. Bat. 1851, from Sumatra and Luzon; and *K. Lobbiana* de Vriese, in de Vriese and Harting, Mon. Maratt. 14. 1853, from Java; of which the last two are figured. We have not undertaken to determine the status of the last three. Most writers have followed Hooker and Baker in merging them with *aesculifolia*; but it is by no means unlikely that careful study will substantiate their claim to recognition, incidentally offering an explanation for the wide range of variation which so-called *aesculifolia* has been supposed to have.

VOL. XVIII, PP. 241-242 DECEMBER 9, 1905

PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

TWO NEW SPECIES OF FISHES FROM BRAZIL.

BY SETH EUGENE MEEK.

Pimelodella eigenmanni sp. nov.

Type from Sao Paulo, Brazil. No. 4,000, Field Columbian Museum.

Length, 101.5 mm.; head, 4.25; depth, 4.35; D. 1–6; A. 8.

Body elongate, not much compressed; head little depressed, its upper surface smooth, snout narrow, pointed; mouth small; jaws equal; teeth in villiform bands in each jaw; eye small, 5.00 in head; snout, 2.75; interorbital 4.80; distance from snout to base of dorsal fin 3.90 in body; dorsal spine with inner margin nearly smooth, its length 1.90 in head, pectoral spine 1.70, dentate on proximal half of its inner margin; adipose fin 3.90 in length of body; anal fin short, its base 2.20 in head; maxillary barbel moderate, its tip reaching base of ventrals; longest mental barbel reaching base of ventrals; least depth of caudal peduncle 2.60 in head; caudal fin forked, its upper lobe the longer.

Color olivaceous, sides with a narrow bluish band, a dark blotch on middle of anterior portion of dorsal fin.

Named for Dr. C. H. Eigenmann, who, more than any one else, has studied South American catfishes.

Anisotrema williamsi sp. nov.

Type from Santos, Brazil. No. 3,350, Field Columbian Museum.

Length, 248 mm.; head, 3.20; depth, 3.15; D. XI–I, II; A. III, 7; scales, 6–48–11.

Body elongate, compressed, the dorsal region not much elevated; profile slightly convex; snout pointed; the upper jaw slightly the longer; eye rather large, its diameter 3.56 in head; mouth rather small, end of maxillary, reaching vertically from anterior margin of orbit; teeth in jaws in bands, the outer series much enlarged and canine like; preorbital 5.95 in head; snout 3.60; margine of preopercle dentate, about 9 teeth on its limb, an enlarged tooth at angle, and about 10 teeth on lower limb, each with its point directed slightly forward; gill rakers 13 + 6, slender, the longest 13.00 in head; dorsal fin emarginate; anterior part of spinous dorsal elevated, longest spine 1.70 in head; second anal spine very strong, its length 1.80 in head; third anal spine 2.75 in head; rows of scales above lateral line parallel with it.

Color olivaceous, silvery; side with seven dark vertical bars on upper three-fifths of body.

The type and three other specimens were donated to the Field Columbian Museum by Horace E. Williams of Sao Paulo, Brazil, for whom the species is named.

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PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

A COLLECTION OF FISHES FROM THE ISTHMUS OF TEHUANTEPEC.

BY SETH EUGENE MEEK.

The small collection of fishes on which this paper is based was made by E. Heller and C. M. Barber for the Field Columbian Museum in December, 1904, and January, 1905, at Achotal, in the State of Vera Cruz, and San Geronimo and Niltepec in the State of Oaxaca. Most interesting are the cichlids, of which there are besides one new species several specimens of *Cichlasoma mojarra* Meek and *Cichlasoma evermanni* Meek. The former species was previously known only from one small specimen from San Geronimo. The collection also records the northern known limit of *Cichlasoma trimaculatum* Günther.

Rhamdia oaxacae Meek.

Achotal.

Carpiodes meridionalis (Günther).

Achotal.

Tetragonopterus aeneus Günther.

Achotal and San Geronimo.

Dorosoma anale Meek.

Achotal.

Signalosa mexicana (Günther).

Achotal.

Gambusia fasciata Meek.

San Geronimo.

Belonesox belizanus Kner.

San Geronimo.

Anableps dovii Gill.

San Geronimo.

Heterandria pleurosilus (Günther).

San Geronimo.

Heterandria lutzi Meek.

Achotal.

Poecilia sphenops Cuvier & Valenciennes.

Achotal and San Geronimo.

Xiphophorus helleri Heckel.

Achotal.

Cichlasoma salvini (Günther).

Achotal.

Cichlasoma mojarra Meek.

Niltepec.

This species was based on a small specimen from San Geronimo, Oaxaca. In the collection are eight specimens which vary in length from 140 mm. to 300 mm. This species differs from *C. salvini* (Günther), which it most resembles, in having a steeper profile, subequal jaws, a less pointed snout, and a less compressed and more robust body. The color markings of the two species are very different. In *C. salvini* there is a broad, lateral band which is sometimes broken into blotches. In *C. mojarra* there is no trace of a lateral band, and the vertical bars are very indistinct. There is a dark blotch above the origin of the lateral line, one on the middle of the side just below the lateral line, and one on the upper half of the base of the caudal fin. These blotches are very prominent and constant. The center of each scale on the adults is lighter, these forming more or less prominent stripes along the rows of scales.

After carefully comparing a number of specimens of *C. salvini* with *C. mojarra* I am unable to agree with Mr. Regan * that the two species are the same.

Cichlasoma evermanni Meek.

Niltepec.

In the collection are five specimens of this species ranging in length from 147 mm. to 200 mm. In all of these the teeth are small, conical and pointed. There is no frenum, but the free portion of the lip is not quite so free at the symphysis as laterally. Apparently from the descriptions only Mr. Reagan † identifies this species with *Cichlasoma heterodontum* (Vail and Pell). This last named species is described as having a very irregular dentition, sufficiently so to suggest its specific name. While it is true that the teeth of older individuals of some species become more or less worn, it is not necessarily true of all in the genus. In this particular instance the specimen described by Vaillant and Pellegrin does not appear to be an old individual, being smaller than the average size of the ten specimens of *C. evermanni* before me. *C. heterodontum* is described as having a frenum.

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*Ann. and Mag. Nat. Hist. p. 334, 1905.

†l. c. p. 241.

While this character in some species varies with age, in this species, judging from the material examined by me, it is constant, the lower lip being nearly as free as in *C. salvini.*

I will mention here that a re-examination of the material at my command has convinced me of the identity of *Cichlasoma melanurum* (Günther) and *Cichlasoma gadowi* Regan.* My opinion here is based on my study of a considerable amount of material both in the field and in the laboratory. In all large groups of animals some species are quite variable and others are not. In order to properly define the more variable forms field work is quite necessary.

Cichlasoma trimaculatum (Günther).

Seven individuals were taken at Achotal. The three lateral spots and the very irregular dentition are well shown in these specimens.

Cichlasoma fenestratum (Günther).

Achotal.

I follow Mr. Reagan in the use of this name instead of *C. parma.*

Cichlasoma zonatum sp. nov.

Type from Niltepec, Oaxaca. Field Columbian Museum. No. 3776.

Total length, 175 mm. Head, 3; depth, 2.11; scales, 7–33–12; D. XVIII, 6; A. VI–8. Body deep, back elevated, profile very convex; mouth small; jaws equal; snout blunt; teeth rather small, pointed, those in front in each jaw slightly the larger; lips thin, lower with well developed frenum; maxillary short, reaching vertical from midway between nostril and eye, its length 4 in head; preorbital 4, postorbital 2.67; distance from inferior margin of the orbit to the horizontal passing through mouth 4.8 in head; diameter of eye 4.36 in head; gill rakers short, 3–7; pectoral fin 4 in length of body; ventrals pointed, short, their tips not reaching first anal spine; spinuous dorsal low, the sixth spine 2.81 in head, the last 2.51; soft dorsal and anal rays reaching slightly past base of caudal fin; least depth of caudal peduncle 2.28 in head. Color dark olivaceous, without evident black bars; a broad black band from opercle to caudal, a few small dark spots above and below this band.

This species belongs in the same group with *C. nebulifer* (Günther) and *C. eigenmanni* Meek. It is a much deeper fish than either of these, has a lower spinous dorsal, fewer dorsal rays, and different coloration.

Thorichthys aureus (Günther).

Mr. Regan has, no doubt, correctly established the identity of *T. aureus* (Günther) and *T. helleri* (Stein.).

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*l. c. 231.

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PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

A NEW BAT FROM MEXICO.

BY WALTER L. HAHN.

A study of the bat genus *Hemiderma*, begun by the author some time since, has been delayed in various ways, and it now becomes necessary to publish a preliminary description of a new species from Mexico. For the use of the specimens on which this description is based the writer is indebted to Dr. C. Hart Merriam, Chief of the Biological Survey.

Hemiderma subrufum sp. nov.

Type from Santa Ifigenia, Oaxaca, Mexico. No. 75,127, U. S. National Museum, Biological Survey Collection. ♂ adult. July 29, 1895. E. W. Nelson and E. A. Goldman. Original number 8235.

General characters—Size small (forearm under 40); fur with a decided reddish tinge; skull short and small with high strongly rounded braincase; teeth small and toothrows strongly divergent posteriorly.

Color.—Ten skins from the type locality are uniformly of a dark reddish brown color above. The individual hairs are banded as follows: A very short (not over ½ mm.) basal area whitish; next a wider band of dark (near the clove brown of Ridgway) which is followed by another and wider band of buffish white; succeeding this is the somewhat narrower band of reddish prout's brown which gives to the animal its characteristic color; hairs minutely tipped with whitish. Underparts similar; but the bands of color less sharply marked off, the dark bands being reduced and the pale areas suffused, making the general color paler and duller.

Fur and Membranes.—The fur, as compared with other specimens of the genus from Mexico, is short and sparse, and the membranes more brownish.

Interfemoral membrane sparsely furred at base. Wing membranes from the ankle directly opposite the calcar.

Skull and Teeth.—The skull is small with a short broad rostrum, and high, strongly rounded braincase. The palate is wide posteriorly, narrowed anteriorly; posterior palatal projection short and broad. Audital bullæ small; basisphenioid pits deep. The teeth are small and the toothrows short, that portion behind the anterior premolar being so strongly divergent as to form a noticeable angle with the line of the anterior portion.

Measurements.—Type:* Forearm, 39; hind foot, 13; calcar, 7; ear from base, 16; ear from notch, 13; nose leaf without horse shoe, 6.5. Skull of type: Greatest length, 21; basal length, 16.5; greatest breadth, 11; greatest depth, 9.5, interorbital breadth, 5; upper toothrow, 7.

Remarks.—Hemiderma subrufum is a well marked form which does not appear to intergrade with any other known species. In size it is intermediate between the *Hemiderma castaneum* of H. Allen and the large Mexican species called *azteca* by Saussure.† The body is small and the limbs slender and short (forearm 39 as compared with 42 given by Saussure). It also differs markedly in cranial characters from *azteca*, the skull being not only shorter and smaller but of a very different aspect, the braincase rising abruptly above the level of the rostrum, its sides flaring out in a broadly rounded arch and the palate and rostrum being relatively much broader. The teeth also are much lighter; the toothrow is shorter by a millimeter and the relative proportions of the cusps of some of the teeth differ markedly.

In addition to the type series from Oaxaca, I have examined specimens in the collection of the Field Columbian Museum from Achotal, Vera Cruz, which do not appear to differ in any essential way from the type. The color is perhaps a little paler but this is an extremely variable character in this genus, in which distinct dichromatism exists.

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* Measurements taken from dry skin.

† *Carollia azteca* Saussure, Rev. et Mag. de Zool. 1860, p. 480. Temperate and tropical Mexico.

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PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

A NEW FAMILY OF JUGULAR ACANTHOPTERYGIANS.

BY THEODORE GILL AND HUGH M. SMITH.

Among the fishes collected by the junior author in Japan in 1903 is a specimen in poor condition which can not be referred to any previously known family. The specimen, about 3 inches long, was obtained in May at Kagoshima, province of Satsuma, island of Kiushu, and was found among a miscellaneous lot of fishes caught in Kagoshima Bay by the local fishermen.

The fish is designated as representing a new genus and species (**Caristius japonicus**) of a peculiar family of jugular acanthopterygians (**Caristiidae**). The distinctive characters are the greatly compressed cuneiform body covered with cycloid scales; no lateral line; branchial apertures ample; high and elongated dorsal fin with the anterior rays crowded forward over the head and eyes; long anal fin; grooved or sheath-bearing abdomen between anal and ventrals; and jugular complete ventrals rooted below preopercles.

The vertebrae number about 40, and the vertebral column (as shown by skiagraph) is singularly deflected downward near and to the occipital condyle; the head is overhung by the extension of the flesh and dorsal fin above and forward; the mouth is large and obliquely cleft, being continued backwards under the eyes; the jaw teeth are slender, acute, and pluriserial; the lower lip is interrupted by a frenum in front; the eyes are large, their diameter being nearly one-half length of head. The height is greatest above ventrals and is contained about $1\frac{3}{4}$ times in total length without caudal.

The radial formula is approximately as follows: Dorsal, 34 (VI, 28 ?); anal, 21; caudal, $x + 9 - 10 + x$; pectorals, 19; ventrals, I, 5 ? The rays above the hind head are elongated and almost as high as the body but those in front progressively diminish forward. The length of ventrals nearly equals the length of head.

The color of the body appears to have been tawny brown, with a silvery sheen and with traces of dark spots on the dorsal region, and the anal and ventrals were apparently blackish.

A detailed description and illustration will be given after the skeletonization of the fish.

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PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

A NEW ANARRHICHADOID FISH.

BY THEODORE GILL.

In order to enable a fuller examination of the comparative characters of the genera Anarrhichas and Lycichthys to be made, a poorly preserved specimen of the latter, supposed to be the *L. latifrons*, was sent to be skeletonized. A comparison of the characters with those of *L. latifrons* and *L. denticulatus*, however, indicate it to be an undescribed species which may be called **Lycichthys paucidens.** The vomerine teeth are confined to the front and there are only 5 teeth remaining, 3 forming a triangle in front and 2 in a cross row behind. (There are sockets for 4 others.) The teeth of the dentaries are mostly uniserial (9 or 10 on each side) but in an outer row are 2 or 3 more on each side. All the teeth are subacute and well separated as in the other species of Lycichthys.

D. 77. A. 46. P. 22. C. 19.

The specimen was obtained from Banqureau near Nova Scotia and will be deposited in the United States National Museum.

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PROCEEDINGS

OF THE

BIOLOGICAL SOCIETY OF WASHINGTON

GENERAL NOTES.

A SECOND SPECIMEN OF *ODONTONYCTERIS MEYERI* JENTINK.*

Among some mammals collected by Dr. Edgar A. Mearns, on the island of Cagayan Sulu, in February, 1904, is an adult male (No. 125,316, United States National Museum) of the bat described by Dr. Jentink as *Odontonycteris meyeri*.† The type, hitherto the only known representative of the genus and species, came from the Sangi Islands, about 500 miles southeast of Cagayan Sulu. The measurements of the second specimen are as follows (those of the type in parenthesis): Head and body, 83; tibia, 16; foot, 10.6; calcar, 3.8; forearm, 40 (39); thumb, 16; second finger, 31 (29); third finger, 80 (78); fourth finger, 64 (63); fifth finger, 62 (56); ear from meatus, 15.8; ear from crown, 12.8; width of ear, 11.—*Gerrit S. Miller, Jr.*

NEW NAME FOR *PONTOLEON*.

In naming the fossil sea-lion from Oregon, described by me in the *Smithsonian Miscellaneous Collections, Quarterly Issue*, Vol. 48, pt. 1, No. 1577, May 13, 1905, I failed to observe that the generic designation *Pontoleon* proposed for it differed only in the final letter from *Pontoleo* Gloger, 1841. Those who do not consider this a sufficient distinction, might use the designation **Pontolis** for *Pontoleon*. The matter is, perhaps, of little importance as Gloger's name is a synonym for the earlier *Otaria*, and can never be used. As the case is perfectly understood, no one is likely to be led astray.—*F. W. True.*

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*By permission of the Secretary of the Smithsonian Institution.

†Notes from the Leyden Museum, XXIII, p. 140, July 15, 1902.

MYOTIS LUCIFUGUS IN KAMCHATKA.

The United States National Museum contains a specimen of a bat from Petropavlovski, Kamchatka, which is of considerable interest. The specimen (No. $\frac{11189}{37449}$) is preserved in alcohol and is in bad condition but practically all the diagnostic characters and measurements can still be determined. A careful examination shows that this bat is not closely related to any known Palaearctic species and that it does not appear to differ in any essential way from the *Myotis lucifugus* of North America.

Some doubt has existed as to the correctness of the data for this specimen because no collector's number or label was attached to it and because the locality given in the Museum catalogue is Petropavlovsk, *Alaska.* Thanks to the kindness of Dr. W. H. Dall, I have been able to obtain for it a record as complete and authentic as that attaching to any alcoholic specimen collected before field labels came into general use. The bottle label is one of those used to indicate specimens received from the Western Union Company's Overland International Telegraph Expedition. The data on it: "Bat, Petropavlovsk, F. Whymper," is in the handwriting of Dr. Dall who has also been good enough to look through his note books for the years during which he was connected with the expedition. He finds that a bat was picked up by one Nicolai Fletcher, a resident of Petropavlovski who had never been in America, and given to Mr. Whymper and finally transmitted to the National Museum through Dr. Dall. That this was the specimen now under consideration there can be no doubt.

So far as I am aware no species of land mammal is known to occur on both sides of the North Pacific. True *Myotis lucifugus* is not known to occur on the west coast of North America anywhere excepting in the vicinity of Kodiak Island and the Alaska Peninsula. Is it possible that its range may extend out over the Aleutian Islands and thence to Kamchatka? It seems much more probable that the specimen obtained by Mr. Whymper was only an accidental visitor carried over in the hold of a ship; but the northwestward distribution of the species is a question worthy of the attention of naturalists and collectors who visit this region.—*Walter L. Hahn.*

MASTODON REMAINS IN THE YUKON VALLEY.

Through the efforts of J. B. Tyrrell of Dawson, Yukon Territory, the U. S. National Museum has come into possession of a well-preserved tooth of a mastodon from the Pleistocene of the Klondike region. It was found beneath 25 feet of "muck" and gravel on claim No. 14, Gold Run Creek. Mrs. Dr. Wills, of Dawson, secured possession of it and transferred it to Mr. Tyrrell and he has kindly sent it to me with the request that it be examined and deposited in the Museum. It is a last lower molar and so far as I can detect does not differ in any important respect from corresponding teeth of the common mastodon (*Mammut americanum*), so many remains of which have been found in the United States.

The best known record of the occurrence of mastodon remains north of the United States seems to be that by Sir John Richardson [*] based upon several scapulae from Swan River, near Lake Winnipeg, Manitoba. A second northern record has been called to my attention by E. A. Preble, that of a tooth recorded by Robert Bell, who says: "In the bed of the Moose River, near the north side below the forks, 46 miles from Moose Factory, a mastodon's jaw with one of the teeth was found by an Indian, who broke out the tooth with his axe and carried it to Moose Factory." [†] In comparison with the Klondike region, however, both of these localities are not far from the center of abundance of mastodon remains.— *Wilfred H. Osgood.*

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[*] Zool. Voy. Herald, pp. 101–102, 141–142, 1854.

[†] Geol. Surv. of Canada, Report of Progress for 1877–8, p. 7c, 1879.

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